(24)

No. 99-1996-CFX Title: J.E.M. Ag Supply, Inc., dba Farm Advantage, Inc., et al., Petitioners
v.
Pioneer Hi-Bred International, Inc.

Docketed:
June 12, 2000 Court: United States Court of Appeals for the Federal Circuit

Entry	Date	Proceedings and Orders
	Jun 12 2000	Petition for writ of certiorari filed. (Response due July 12, 2000)
	Jul 12 2000	Brief of respondent Pioneer Hi-Bred International, Inc. in opposition filed.
	Jul 25 2000	Reply brief of petitioners J.E.M. Ag Supply, et al. filed.
	Jul 26 2000	DISTRIBUTED for Conference of September 25, 2000
	Oct 2 2000	The Solicitor General is invited to file a brief in this case expressing the views of the United States. Justice O'Connor OUT.
	Jan 17 2001	Brief amicus curiae of United States filed.
	Jan 24 2001	REDISTRIBUTED for Conference of February 16, 2001
	Jan 25 2001	Petitioners response to Solicitor General's amicus brief.
	Jan 26 2001	Supplemental brief of petitioner in response to amicus brief of Solicitor General filed.
	Feb 20 2001	Petition GRANTED. Justice O'Connor OUT. SET FOR ARGUMENT October 3, 2001. **********
	Mar 28 2001	Order extending time to file brief of petitioner on the merits until May 4, 2001.
	Apr 20 2001	Order extending time to file respondent's brief on the merits to and including June 15, 2001.
	May 2 2001	Brief amici curiae of Malla Pollack and Other Law Professors filed.
	May 4 2001	Brief amici curiae of American Corn Growers Association, et al. filed.
	May 4 2001	Brief of petitioners J.E.M. Ag Supply, et al. filed.
	May 4 2001	Joint appendix filed.
	May 4 2001	Joint appendix in two volumes.
	Jun 11 2001	Brief amicus curiae of American Intellectual Property Law Association filed.
	Jun 13 2001	Brief amicus curiae of American Seed Trade Association filed.
	Jun 15 2001	Brief of respondent Pioneer Hi-Bred International, Inc. filed.
	Jun 15 2001	Brief amici curiae of Washington Legal Foundation, et al. filed.
	Jun 15 2001	Brief amicus curiae of American Bar Association filed.
	Jun 15 2001	Brief amicus curiae of Monsanto Company filed.
	Jun 15 2001	Brief amicus curiae of American Crop Protection Association filed.
	Jun 15 2001	Brief amicus curiae of United States filed.
	Jun 15 2001	Brief amicus curiae of Delta and Pine Land Company filed.
	Jun 15 2001	Brief of Cargill, Incorporated filed.
	Jun 15 2001	Brief amicus curiae of Biotechnology Industry Organization

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Entry	Date	Proceedings and Orders
		filed.
	Jun 15 2001	Brief amicus curiae of BASF Corporation filed.
	Jun 20 2001	Motion of the Solicitor General for leave to participate in oral argument as amicus curiae and for divided argument filed.
	Jun 29 2001	Motion of the Solicitor General for leave to participate in oral argument as amicus curiae and for divided argument GRANTED. Justice O'Connor OUT.
	Jul 12 2001	Record filed.
	Jul 16 2001	Reply brief of petitioners J.E.M. Ag Supply, et al. filed.
	Jul 20 2001	CIRCULATED.
	Jul 27 2001	Record filed.
	Oct 3 2001	ARGUED.
	Oct 16 2001	Letter and attached documents submitted by the Solicitor General in response to request for said materials during oral argument.

Supreme Court, U.S.
FILED

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No. _____

In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC.
(doing business as Farm Advantage, Inc.)
FARM ADVANTAGE, INC., LARRY BENZ,
MERLE PRUETT (doing business as
Siouxland Seeds, Inc.),
KEVIN WOLFSWINKEL, TIM KAMSTRA,
and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

**On Petition For Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit**

PETITION FOR WRIT OF CERTIORARI

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QUESTION PRESENTED

Are patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, et seq., and the Plant Patent Act of 1930, 35 U.S.C. § 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants or plant varieties?

PARTIES TO THE PROCEEDING

Petitioners are J.E.M. Ag Supply, Inc. (doing business as Farm Advantage, Inc.) Farm Advantage, Inc., Larry Benz, Merle Pruett (doing business as Siouxland Seeds, Inc.), Kevin Wolfswinkel, Tim Kamstra, and Tom Eischen Seed & Chemicals.

(Parent corporations or publicly held companies owning 10% or more of any Petitioner's corporate stock: none.)

Respondent is Pioneer Hi-Bred International Inc.

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PETITION FOR WRIT OF CERTIORARI

Petitioners petition for a writ of certiorari to review the judgment of the Federal Circuit Court of Appeals in this case.

OPINIONS BELOW

The Federal Circuit opinion (App. 1-9) is reported at *Pioneer Hybrid Internat., Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374 (Fed. Cir. 2000). The circuit's decision granting interlocutory appeal (App. 10-12) is unreported. The district court's opinion (App. 13-39) is unreported. The circuit's opinion denying the petitioners' petition for rehearing en banc (App. 40-41) is unreported.

STATEMENT OF JURISDICTION

The judgment of the Federal Circuit Court of Appeals was entered on January 19, 2000. The Court of Appeals entered an order on March 13, 2000, denying a timely petition for rehearing, which had first been referred as a petition for rehearing to the panel that heard the appeal, and thereafter was referred along with the response to the circuit judges who were in regular active service. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISIONS INVOLVED

1. Revised States, §§ 4884, 4886 (the precursor of 35 U.S.C. § 101) and 4888, as amended by the 1930 Plant Patent Act (App. 42).
2. 35 U.S.C. § 101, defining the subject matter of "Inventions patentable" (App. 43).
3. 35 U.S.C. § 161, defining the subject matter of "Patents for plants" issued under Title 35 (App. 44).
4. 35 U.S.C. § 163, limiting a plant patent grant to the right to exclude others from asexually reproducing the plant or selling or using the plant so reproduced (App. 44).

5. The Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321, 2323, 2401(a)(3), 2402 (defining the right of a plant breeder to obtain a PVP certificate on a plant variety that has been sexually reproduced – that is, by seed) (App. 45), 2541 (sexual reproduction of a plant variety, or selling or using plants so reproduced, constitutes infringement) (App. 46), 2543 (infringement exception for a farmer saving seed) (App. 48), 2544 (infringement exception for plant breeding research (App. 43), and 2567.

6. Plant Patent Amendments Act of 1998 P.L. 105-289 (HR 1197), October 27, 1998 (App. 49), amending 35 U.S.C. § 163 to make it more consistent with protections offered to breeders of sexually reproduced plants under the Plant Variety Protection Act Amendments of 1994.

STATEMENT OF THE CASE

A. Basis of Jurisdiction in the Court of First Instance and the Circuit Court of Appeals

The respondent Pioneer Hi-Bred International, Inc., initiated this action through a claim for patent infringement under 35 U.S.C. § 271. District court jurisdiction was averred under 28 U.S.C. § 1338(a), providing in pertinent part that "[t]he district courts shall have jurisdiction of any civil action arising under any act of Congress relating to patents. . . . " Jurisdiction also rested on federal question jurisdiction under 28 U.S.C. § 1331(a), because the action arose under the patent laws of the United States. The Federal Circuit had jurisdiction of that appeal under 28 U.S.C. § 1292(b), (c)(1), as the circuit granted the Petitioners' petition for interlocutory appeal and the circuit had jurisdiction of the appeal under 28 U.S.C. § 1295.

B. Proceedings Below

The respondent Pioneer sued the petitioners (collectively "Farm Advantage" unless the context indicates otherwise) for infringement of seventeen utility patents issued on sexually reproducing corn plant varieties and their seeds. Pioneer asserted that Farm Advantage infringed on the patents by purchasing Pioneer brand hybrid corn seed for resale to farmer customers for ultimate planting in their fields.

Farm Advantage answered in general denial and raised the specific defense of patent invalidity. It soon moved for full summary judgment on this defense. It asserted that the patents-in-suit were improvidently granted by the Patent and Trademark Office because plants and plant varieties are not included within the ambit of patentable subject matter set out in 35 U.S.C. § 101. It further asserted that the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321 et seq. (PVPA), is the exclusive means of obtaining a federal statutory right to exclude others from sexually reproducing (by seed) a plant variety, or from selling or using plants or seeds so reproduced. Pioneer resisted the motion, basically on the position that federal patent-type protection for sexually reproducing plant varieties is available under both Title 35 and the PVPA.

The district court overruled the motion for summary judgment by order dated August 19, 1998. (App. 13-39) The district court certified the issue for interlocutory appeal by supplemental order dated August 31, 1998. On September 9, 1998, Farm Advantage filed with the Circuit Court of Appeals its petition for interlocutory appeal, which Pioneer resisted. By order entered October 27, 1998, a three-judge panel of the Circuit Court granted the petition. (App. 10-12)

C. Facts Material to Consideration of the Questions Presented

1. The individual petitioner Farm Advantage, Inc., is a family-owned full service agricultural supply business located in Belmond, Iowa. As just one aspect of its full service, Farm Advantage purchased some bags of Pioneer hybrid corn seed to resell to some of its farmer customers. The seed was not removed from the Pioneer bags and the markings on the Pioneer bags were not altered. Pioneer has sued the Petitioners alleging their acts constitute infringement of utility patents on corn plants and seeds issued to Pioneer under Title 35 of the United States Code.

2. Patent No. 5,491,295 (the '295 patent) is one of the patents Pioneer has sued on. It was issued February 13, 1996, and the grant carries the title "Hybrid Corn Plant and Seed." The grant states at Column 7:

> This invention includes the hybrid corn seed of 3394, the hybrid corn plant produced from the hybrid corn seed, and variants, mutants, and modifications of 3394.

The grant states at Column 22:

> What is claimed is:
>
> 1. A hybrid corn plant designated as 3394 and its parts, and having ATCC accession number 97224.
>
> . . .
>
> 6. Seed produced by a hybrid corn plant designated as 3394, said hybrid corn plant having ATCC accession number 97224.

3. The hybrid corn plants that are the subject of the '295 patent are grown by seeds.

4. The grants for the other patents-in-suit that also carry the title "Hybrid Corn Plant and Seed" all contain language that is the same or to the same effect as the statements quoted above in § 2 from the grant filed for the '295 patent.

5. Patent No. 5,506,367 (the '367 patent) was issued April 9, 1996, and the grant carries the title "Inbred Corn Line PHP38." The '367 patent states at Column 6:

> Inbred corn line PHP38 is a yellow, dent corn inbred that provides an acceptable male or female parental line in crosses for producing first generation F1 corn hybrids.

The '367 patent also states at Column 6:

> Inbred corn line PHP38, being substantially homozygous, can be reproduced by planting seeds of the line, growing the resulting corn plants under self-pollinating or sib-pollinating conditions with adequate isolation, and harvesting the resulting seed, using techniques familiar to the agricultural arts.

6. The plants of the inbred corn line that are the subject of the '367 patent are grown by seeds.

7. The grants filed for the other patents-in-suit that also carry the title "inbred corn line" all contain language that is the same or to the same effect as the statements quoted above in § 5 from the grant filed for the '367 patent.

8. All of the inbred corn lines identified as subjects of the patents-in-suit also are subjects of Plant Variety Protection Certificates issued to Pioneer under the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, et seq. (Record of hearing on summary judgment motion of 04-30-98, at p. 32.)

9. Pioneer's tags affixed to its bags of hybrid seed corn contain the following statement:

> The purchase of these seeds includes a limited license under patent(s) [numbers omitted] (pending patent applications) to produce a single corn crop in the United States (or other applicable country). This license does not extend to the use of seed from such crop or the progeny thereof for propagation or seed multiplication. Furthermore, the use of such seed or the progeny thereof for propagation or seed multiplication or for production or development

of a hybrid or different variety of seed is strictly prohibited.

REASONS FOR GRANTING THE WRIT

I.

THE DECISION OF THE COURT OF APPEALS CONFLICTS WITH DECISIONS OF THE UNITED STATES SUPREME COURT.

A. Preliminary

The Panel of the Federal Circuit Court of Appeals concluded that the general language of 35 U.S.C. § 101 provided authority for the Patent and Trademark Office (PTO) to issue utility patents granting to the holder the right to exclude others from sexually reproducing plants or plant varieties, and from selling or using plants or plant varieties that have been sexually reproduced. This judgment defeats the intent of Congress evidenced by its enactment of two plant specific statutes: the 1930 Plant Patent Act ("PPA"), 35 U.S.C. §§ 161-164, and the Plant Variety Protection Act of 1970 ("PVPA"), 7 U.S.C. § 2321, et seq. The § 101 patents purport to grant holders rights of exclusion that Congress deliberately chose not to grant when it debated and enacted the two plant specific statutes. For example, the Federal Circuit Panel's judgment makes this conduct patent infringement: (1) a farmer's act of saving patented seed to plant on his own farm in a subsequent growing season, and (2) a plant breeding researcher's act of using a patented plant in bona fide research for the purpose of developing a new plant variety.[1] Both of these acts are specifically excluded from acts of infringement under the PVPA. 7 U.S.C. §§ 2543-2544.

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[1] Experimental use of a patented item in connection with the experimenter's business or with the idea of selling the experimental results is infringement under Title 35. *Roche Products, Inc. v. Bolar Pharmaceutical Co., Inc.*, 733 F.2d 858, 862-863 (Fed. Cir. 1984).

Further, Congress when it enacted the PVPA set four standards that must be satisfied before a certificate of plant variety protection can be issued granting the right to exclude others from sexually reproducing a plant variety, or from selling or using a plant variety so reproduced. A plant variety is protectable under the PVPA only if it is judged to be new, distinct, uniform (to a "commercially acceptable" degree), and stable. 7 U.S.C. § 2402. Section 101 utility patents on plants and plant varieties are not issued under these four standards. Applying these standards requires judgments of degree. Congress as part of the PVPA directed that a special agency be created to apply these standards and administer the other carefully drawn plant specific provisions of the PVPA. The Act mandates creation of the Plant Variety Protection Office and its governing body, the Plant Variety Protection Board. 7 U.S.C. §§ 2321, 2323, and 2327. The Act requires that the Plant Variety Protection Board consist of "experts in various areas of varietal development covered by this chapter", which "shall include farmer representation and shall be drawn approximately equally from the private or seed industry sector and from the sector of government or the public". 7 U.S.C. § 2327. The Panel's ruling judicially imposes the PTO as an agency authorized to grant the right to exclude others from sexually reproducing plants, or selling or using plants so reproduced, despite the fact that Congress in the plant specific PVPA made no mention of the PTO filling such a role.

B. The Express Terms of the Plant Specific Statutes Preclude Issuance of Utility Patents on Plants Under 35 U.S.C. § 101.

This Court instructed in *Demarest v. Manspeaker*, 498 U.S. 184, 190 (1991): "When we find the terms of a statute unambiguous, judicial inquiry is complete except in rare

and exceptional circumstances." Recently in *Food and Drug Administration v. Brown & Williamson Tobacco Corporation*, 529 U.S. ___, 120 S.Ct. 1297 (March 21, 2000), this Court repeated its instructions on the importance of confining an agency's exercise of authority to that actually granted by the text of its enabling statute:

> Regardless of how serious the problem an administrative agency seeks to address, however, it may not exercise its authority "in a manner that is inconsistent with the administrative structure that Congress enacted into law." ETSI Pipeline Project v. Missouri, 484 U.S. 495, 517, 108 S.Ct. 805, 98 L.Ed.2d 898 (1988). And although agencies are generally entitled to deference in the interpretation of statues that they administer, a reviewing "court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc. 467 U.S. 837, 842-843, 104 S.Ct. 2778, 81 L.Ed.2d 694 (1984).

The Panel's judgment conflicts with long-standing precedent of this Court which even at the turn of the last century was old law:

> It is a well-settled principle of construction that specific terms covering the given subject-matter will prevail over general language of the same or another statute which might otherwise prove controlling. Re Rouse, H. & Co. 33 C. C. A. 356, 63 U. S. App. 570, 91 Fed. 91-100, and cases therein cited; Townsend v. Little, 109 U. S. 504, 512, 27 L. Ed. 1012, 1015, 3 Sup. Ct. Rep. 357.

Kepner v. United States, 195 U.S. 100, 125 (1904). This rule has been consistently followed: *Ginsberg & Sons v. Popkin*, 285 U.S. 204, 208 (1931); *Clifford F. MacEvoy Co. v. United States*, 322 U.S. 102, 107 (1944); *Fourco Glass Company v. Transmirra Products Corporation*, 353 U.S. 222, 228-229 (1957); *N.L.R.B. v. Allis-Chalmers Mfg. Co.*, 388 U.S. 175,

194 (1967); *Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980); *Crawford Fitting Company v. J.T. Gibbons, Inc.*, 482 U.S. 437, 444-445 (1987); *Morales v. Trans World Airlines, Inc.*, 504 U.S. 374, 384-385 (1992); *United States v. Estate of Romani*, 523 U.S. 517, 530-534 (1998); *Food and Drug Administration v. Brown & Williamson Tobacco Corporation*, 529 U.S. ___, 120 S.Ct. 1291, 1297, 1300-1301, 1306-1307 (Mar. 21, 2000); *Application of Bergy and Application of Chakrabarty*, 596 F.2d 952, 980, 984, 987 (U.S. Ct. Cust. & Pat. App. 1979), *aff'd Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

Prior to enactment of the 1930 Plant Patent Act, 35 U.S.C. §§ 161-164 (formerly Revised Statutes, §§ 4884, 4886 and 4888), the definition of things patentable was "any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof . . . ".[2] This definition was contained in Revised Statutes, § 4886, the precursor of 35 U.S.C. § 101. The 1930 PPA expanded the definition to include the new category of "plants" by adding to § 4886 the phrase "or who has invented or discovered and *asexually* reproduced any distinct and new variety of plant . . . " (emphasis added). The PPA expanded the § 4884 rights a patent holder might obtain by adding the words "(including in the case of a plant patent the exclusive right to *asexually* reproduce the plant) . . . " (emphasis added). Sexual reproduction of plants is reproducing plants by seed. Asexual

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[2] The § 101 definition of things patentable is largely unchanged from the original words penned by Thomas Jefferson in 1793. Jefferson was a plant breeder: "[T]he greatest service which can be rendered any country is to add a useful plant to its culture." *The Garden and Farm Books of Thomas Jefferson*, p. 509, Robert C. Baron Ed., 1987. Jefferson's exclusion of "plant" in the definition of things patentable was a conscious omission.

reproduction of plants is accomplished by budding, grafting, etc., but not by seed.[3] It could not be more clear that Congress in passing these amendments intended that the words "art, machine, manufacture, or composition of matter" *did not include "plants"*, and that a patent issued on a "plant" conferred only the right to exclude others from *asexually* reproducing the plant. If the patent laws already authorized patents on "plants" that protected the right to asexually *and* sexually reproduce them, there would have been no reason to pass the 1930 PPA amendments.

The comprehensive revision of Title 35 by the 1952 Congress moved the plant patent provisions into a separate Chapter 15 titled "Patents for Plants". (35 U.S.C. §§ 161-164). The 1952 Congress placed the definition of things patentable *other than "plants"* in 35 U.S.C. § 101 and gave that section the title "Inventions Patentable". Chapter 15 continued to limit plant patents to the right to exclude others only from *asexually* reproducing the plant. 7 U.S.C. § 161. None of this legislative effort by Congress in the 1952 Patent Act makes sense if Congress intended that § 101 authorized issuance of patents on plants or plant varieties that confer on the patent holder the right to exclude others from *sexually reproducing* a patented plant or plant variety. The 1952 Congress would not have moved the word "plant" out of § 101 and into Chapter 15 and maintained the asexual reproduction limitation if it intended that § 101 would authorize patents on plants

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[3] Asexually reproducing a plant produces offspring with a genetic combination identical to that of the single parent. Thus, a plant variety produced by asexual reproduction consists of genetic clones of the original parent. Sexual reproduction produces offspring with a genetic combination different than that of either of the two parents, resulting in a plant variety consisting of a range of genetic combinations. *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567-1568 (Fed. Cir. 1995).

granting the right to exclude others from sexually reproducing plants. If the 1952 Congress had intended § 101 to allow protection of sexual reproduction of plants, *it would have said so*, as it did with regard to protecting asexual reproduction of plants. The Federal Circuit Panel ignored the express words of the statute and judicially amended it by injecting language pertaining to plants that does not appear in § 101.

After years of study and deliberation, Congress in 1970 enacted the Plant Variety Protection Act (PVPA), 7 U.S.C. § 2321, et seq. This comprehensive statute is designed to provide federal statutory protection for plant varieties that require use of sexual reproduction (by seed) to be commercially viable. It is not realistic to contend that the 1970 Congress would carefully construct a complex specialized statute like the PVPA for the purpose of covering a particular class of plants and accord not a scintilla of its attention to 35 U.S.C. § 101 if Congress in fact intended § 101 to authorize patents on plants and thus negate many of the very concepts the 1970 Congress deliberately planted in the PVPA. To now administratively and judicially create such a § 101 patent on "plants" amounts to legislation that overrides the 1930 PPA, the 1952 Patent Act, and the 1970 PVPA. This is not agency or judicial construction of a Congressional enactment – it is Article II and Article III bodies usurping Congress's Article I authority to enact legislation. The PTO's administrative agency "[c]onstruction may not be substituted for legislation." *United States v. Missouri Pacific R. Co.*, 278 U.S. 269, 278, 49 S.Ct. 133 (1929). An agency's action cannot create statutory authority Congress did not intend to confer:

> Still again, it is urged that the commission has decided that it possesses this power, and has acted upon such decision, and an appeal is made to the rule of contemporaneous construction. But it would be strange if an administrative body could by any mere process of

> construction create for itself a power which Congress had not given to it.

Interstate Commerce Commission v. Cincinnati N.O. & T.P.R. Co., 167 U.S. 479, 510 (1897).

The Federal Circuit's order denying Petitioners' Petition for Rehearing En Banc was issued March 13, 2000. (App. 40-41) On March 21, 2000 this Court issued its opinion in *Food and Drug Administration v. Brown & Williamson Tobacco Corporation*, 529 U.S. ___, 120 S.Ct. 1291 (2000), applying the rule of statutory construction that a specific statute on a given subject controls over a more general one that otherwise might arguably include the subject within its ambit. Consequently, the Federal Circuit's ruling must be viewed in light of the fact that the panel did not have the *Brown & Williamson* case for guidance.

In *Brown & Williamson* the Court held that the general language of the Food, Drug and Cosmetic Act (FDCA), 21 U.S.C. § 301, et seq., giving the Federal Drug Administration power to regulate "drugs", "devices", and "combination products", did not authorize the FDA to regulate cigarettes and smokeless tobacco. Since the enactment of the FDCA, Congress had passed incremental tobacco specific legislation in the form of six acts regulating tobacco. This evidenced Congressional intent that the FDA did not have jurisdiction under the FDCA to regulate the specific subject of tobacco. This Court in *Brown & Williamson* explained at 120 S.Ct. 1300-1301:

> Under Chevron, a reviewing court must first ask "whether Congress has directly spoken to the precise question at issue." Id., at 842, 104 S.Ct. 2778. If Congress has done so, the inquiry is at an end; the court "must give effect to the unambiguosly expressed intent of Congress." . . .
>
> . . . It is a "fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." . . . A court must therefore interpret the statute "as a

> symmetrical and coherent regulatory scheme," . . . and "fit, if possible, all parts into an harmonious whole," . . . *Similarly, the meaning of one statute may be affected by other Acts, particularly where Congress has spoken subsequently and more specifically to the topic at hand.* See United States v. Estate of Romani, 523 U.S. 517, 530-531, 118 S.Ct. 1478, 140 L.Ed.2d 710 (1998); United States v. Fausto, 484 U.S. 439, 453, 108 S.Ct. 668 98 L.Ed.2d 830 (1988). [Emphasis added]

This Court continued at 120 S.Ct. 1306, instructing that the subsequently enacted tobacco specific legislation affected the implications that could be drawn from the general language of the FDCA:

> In determining whether Congress has spoken directly to the FDA's authority to regulate tobacco, we must also consider in greater detail the tobacco-specific legislation that Congress has enacted over 35 years. At the time a statute is enacted, it may have a range of plausible meanings. Over time, however, subsequent acts can shape or focus those meanings. The "classic judicial task of reconciling many laws enacted over time, and getting them to 'make sense' in combination, necessarily assumes that the implications of a statue may be altered by the implications of a later statue." United States v. Fausto, 484 U.S., at 453, 108 S.Ct. 668. *This is particularly so where the scope of the earlier statute is broad but the subsequent statutes more specifically address the topic at hand. As we recognized recently in United States v. Estate of Romani, "a specific policy embodied in a later federal statute should control our construction of the [earlier] statute, even though it ha[s] not been expressly amended." 523 U.S., at 530-531, 118 S.Ct. 1478.* [Emphasis added]

This Court therefore held in *Brown & Williamson* at 120 S.Ct. 1307:

> Congress has created a distinct regulatory scheme to address the problem of tobacco and health, and that scheme, as presently constructed, precludes any role for the FDA.

The PVPA is a *comprehensive* act enacted after § 101 that governs the precise and single subject of federal protection of sexually reproducing plant varieties. Unlike the tobacco specific legislation involved in *Brown v. Williamson*, the PVPA is comprehensive instead of incremental. Also unlike *Brown & Williamson*, under the PVPA Congress established an administrative agency within the Department of Agriculture to determine issues arising under the PVPA – the PVP Office and PVP Board. The case for no authority in the PTO to issue patents on sexually reproducing plant varieties accordingly is much stronger than the case against the FDA for authority to regulate tobacco products.

In *United States v. Estate of Romani*, 523 U.S. 517, 532 (1998), this Court likewise explained:

> As was the case with the National Bank Act, the Transportation Act of 1920, and the Bankruptcy Act of 1989, *the Tax Lien Act is the later statute, the more specific statute, and its provisions are comprehensive, reflecting an obvious attempt to accommodate the strong policy objections to the enforcement of secret liens*. . . . Even before the 1966 amendments to the Tax Lien Act, this Court assumed that the more recent and specific provisions of that Act would apply were they to conflict with the older priority statute. [Emphasis added]

Brown & Williamson and *Romani* squarely support the position of the petitioners before the Federal Circuit Panel that the later enacted plant specific statutes (PPA and PVPA) control over the more general 35 U.S.C. § 101. The Panel's opinion dismissed petitioners' statutory construction arguments without analysis in these conclusory statements (App. 8):

> The Court in *Chakrabarty* responded to the objection to patenting living things by stating that

> "Congress is free to amend § 101 so as to exclude from patent protection organisms produced by genetic engineering . . . Or it may choose to craft a statute specifically designed for such living things." 447 U.S. at 318, 206 USPQ at 201. The defendants argue that this is what Congress did in the PVPA. However, the PVPA does not purport to remove plants from the patent statute. Neither Congress nor the courts excluded new plant varieties from the patent statute; the enactment of the PVPA did not effect such an exclusion.

The PVPA did not expressly carve out sexual reproduction of plants from rights granted by the general patent statute because Congress had already done this when it enacted the plant specific 1930 PPA expressly limiting patents to asexual reproduction. The 1952 Congress again endorsed this intent to exclude sexual reproduction of plants from patent rights when it removed "plant" from the definition of patentable subject matter in § 101, moved "plant" to § 161, and restricted plant patents permitted by Chapter 15 of Title 35 to excluding others from asexual reproduction of plants. 7 U.S.C. §§ 161, 163. The Panel's statement that the plant specific PVPA did not effect an exclusion of sexually reproducing plants from the more general patent statute violates the rule laid down in *Brown & Williamson* that a later enacted product specific regulatory statute controls over a more general statute.

C. The Federal Circuit Relied on an Erroneous Reading of Legislative History and Ignored the Language Congress Used in the Statutes Themselves.

The Panel actually based its ruling on an incorrect reading of legislative history rather than the texts of the successively enacted relevant statutes: the 1930 PPA, the 1952 Patent Act, and the 1970 PVPA. The Panel said at page 2 of its ruling (App. 3):

> The district court held that the Supreme Court in *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 206 USPQ 193, 197 (1980), in stating that "Congress intended statutory subject matter to 'include anything under the sun that is made by man,' " (quoting S. Rep. No. 1979 at 5 (1952)), confirmed that there is no basis in law for excluding living things, in this case seeds and seed-grown plants and parts thereof, from the subject matter included in § 101 . . .

The Panel misstates the holding of *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 318 (1980). The Panel is mistaken in its belief that the Court in *Chakrabarty* held that "anything under the sun that is made by man" is patentable subject matter under § 101. Examination of the *Chakrabarty* opinion compels the conclusion that the Panel's ruling in the present case conflicts with the clear teachings of *Chakrabarty*.

The source of the "anything under the sun" statement is Sen. Rep. No. 82-1979, 82nd Cong. 2nd Sess. p. 5 (1952), issued in connection with Congress' 1952 comprehensive revision of the patent laws. The quotation presented by the Panel must be read in its entirety and in its original context in the legislative reports. The full and correct statement is: "A person may have 'invented' *a machine or a manufacture*, which may include anything under the sun that is made by man . . . " (emphasis added). Sen. Rep. No. 82-1979, p. 5 (the Senate Report repeats the substance of the House Report). The report here was addressing "a machine or manufacture".[4] The very next page (6) of the Senate Report specifically addresses "plants": "Chapter 15 collects the provisions relating to plant patents . . . " At page 14 the Senate Report states: "Section 101 follows the wording of the existing statute as to the subject matter for patents, except

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[4] Plants replicate themselves if the DNA is protected as the plant grows and the seed is stored. "Machines and manufactures" do not.

that reference to plant patents has been omitted for incorporation in section 301 [35 U.S.C. § 101] . . . " (*See also* p. 16 of the Senate Report moving the relaxed written description requirement for "plants" to the new Chapter 15.) Thus, when read in the context of the original source document, the committee report's phrase "anything under the sun that is made by man" was not intended by Congress to have the effect decades later of rewriting § 101 to once again include "plants" and do so without the original asexual reproduction limitation. Nor did the Supreme Court by use of the "anything under the sun" phrase in *Chakrabarty* mean that "plants" were patentable subject matter under § 101. *Chakrabarty* decided the § 101 patentability of bacteria, not "plants".

The fact that the phrase "anything under the sun that is made by man" was not intended to include "plants" certainly was clear to Judge Rich when he authored the opinion in *Application of Bergy and Application of Chakrabarty*, 596 F.2d 952 (U.S. Ct. Cust. & Pat. App. 1979), *aff'd, Diamond v. Chakrabarty*, 447 U.S. 303 (1980). At 596 F.2d 987 Judge Rich wrote:

> The terms are broad: "any * * * manufacture, or composition of matter." If we had any doubt about the propriety of giving those words a broad interpretation, it would be dispelled by the identical statement in the House and Senate reports accompanying the 1952 reenactment, quoted supra, that "a machine, or a manufacture * * * may include *anything under the sun that is made by man*." (Emphasis ours.)[25]

Judge Rich made clear at note 25 that neither the phrase plucked from legislative history, nor the text of § 101, was intended by the 1952 Congress to include "plants":

> We recognize that, at the time the statement was made, its authors realized that Congress did not intend the term "manufacture" in § 101 to include plants, which were specifically provided for elsewhere. It is with this in mind that we take the quoted statement as an expression of

> congressional will that the term "manufacture" otherwise be given the broadest possible interpretation.

596 F.2d at 987, n. 25.

The Federal Circuit Panel incorrectly concluded that, "The defendants do not dispute that the subject matter of the patents in suit is within the scope of the *Chakrabarty* decision . . . " (App. 4). What petitioners actually did not dispute is that under *Chakrabarty* the fact that plants are living things itself is not a sufficient reason to exclude them from § 101 patentable subject matter. The reason plants are *not* included within § 101 patentable subject matter is because Congress did not intend § 101 to authorize issuance of patents on *"plants"*.

In *Chakrabarty* it was argued that patents cannot issue on bacteria because the 1970 PVPA specifically excluded bacteria from protection. 7 U.S.C. § 2402(a). However, the *Chakrabarty* Court observed that the legislative history of the PVPA gave no reason for that exclusion. The court explained at 447 U.S. 314:

> In any event, absent some clear indication that Congress "focused on [the] issues . . . directly related to the one presently before the Court," SEC v. Sloan, 436 U.S. 103, 120-121, 98 S.Ct. 1702, 1713, 56 L.Ed.2d 148 (1978), there is no basis for reading into its actions an intent to modify the plain meaning of the words found in § 101. See TVA v. Hill, 437 U.S. 153, 189-193, 98 S.Ct. 2279, 2299-2301, 57 L.Ed.2d 117 (1978); United States v. Price, 361 U.S. 304, 313, 80 S.Ct. 326, 331, 4 L.Ed.2d 334 (1960).

The history of federal statutory protection for "plants" is exactly opposite that of bacteria. Congress time and again had addressed the precise issue and repeatedly has decided not to employ Title 35 as a means of protecting the right to sexually reproduce "plants". The Panel did not recognize the importance of the statutory history and incorrectly failed to follow *Chakrabarty*. It entirely misapplied that opinion to the facts of the present case. The

present dispute deals with patentability of sexually reproducing plants – the precise and sole subject of the PVPA.

In *Chakrabarty*, 447 U.S. at 318, the Court discussed two ways in which Congress could express an intent to exclude a particular type of living organism from the scope of § 101 patentable subject matter:

> Congress is free to amend § 101 so as to exclude from patent protection organisms produced by genetic engineering. Cf. U.S.C. § 218(a), exempting from patent protection inventions "useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon." Or it may choose to craft a statute specifically designed for such living things. But, until Congress takes such action, this Court must construe the language of § 101 as it is. The language of that section fairly embraces respondent's invention.

In the case of sexual reproduction of plants *Congress has done both*. In enacting the 1930 PPA, Congress specifically expanded the scope of § 101's precursor, Revised Statutes § 4886, to include for the first time "plants", but limited the expansion to asexually reproduced plants. Congress then in 1952 *specifically refused to include patents on "plants" in § 101* and placed them in a separate Chapter 15 of Title 35. Congress later passed a separate law, the 1970 PVPA, specifically designed to provide protection of the right to sexually reproduce novel varieties of plants, or use or sell plants so reproduced. The Panel's approval of the granting of patent protection to sexually reproducing plants under 35 U.S.C. § 101 is in direct conflict with (1) Congress' decision not to include sexual reproduction of plants in the 1930 PPA, (2) Congress' 1952 decision to exclude "plants" from § 101, (3) Congress' enactment of the PVPA of 1970, and (4) the Supreme Court's dictates in *Chakrabarty*.

At some point it will be argued in resistance to this petition that without § 101 patent protection for sexually

reproducing plant varieties there will not be sufficient incentive to conduct research and development. There is not a shred of testimony in this case supporting such a doomsday prognosis. In any case, this prediction raises facts of a legislative, not judicial, character. Congress considered this precise matter before it enacted the PVPA, which guarantees farmers the right to save seed for planting and guarantees plant breeders the right to carry on bona fide research without becoming subject to civil liability for infringement. If Pioneer (now DuPont) or Monsanto (now Pharmacia) wants to rehash this argument, the proper forum is Congress for its deliberation. There it will be tested by investigators, economists and scientists backed by the resources of the federal government.

The texts of the statutes involved in this case, when viewed in the context of their successive enactments, clearly establish that "plants" are not intended to be patentable subject matter under § 101. But if there is any residual doubt about this conclusion, legislative history removes it. Where the statutory language "is not free from doubt we are justified in seeking enlightenment from reports of Congressional Committees and explanations given on the floor of the Senate and House by those in charge of the measure." *Wright v. Vinton Branch of Mountain Trust Bank*, 300 U.S. 440, 463, n. 8, 57 S.Ct. 556 (1937). A court may in particular consider the legislative history as an aid to confirming the *purpose or design* of a statute. *Commissioner of Internal Revenue v. Bilder*, 369 U.S. 499, 503-504, 82 S.Ct. 881 (1962); *Wright*, *supra* 300 U.S. at 463, n. 8.

The Senate Committee on Patents Report on the PPA stated:

> I. Purposes of the Bill
>
> The purpose of the bill is to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry, and thus assist in placing agriculture on a basis of economic equality with industry. The bill will remove the existing discrimination between plant developers and industrial inventors. To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that is by grafting, budding, cuttings, layering, division, and the like, *but not by seeds*. [Emphasis added]

Senate Report No. 315, Calendar 307 [To Accompany S. 4015], 71st Congress, April 2, 1930, p. 1. Senate Report No. 315 also explained at page 4 that the purpose of the PPA was to grant a limited form of protection:

> Patent Grants Right Of Asexual Reproduction Only
>
> . . . On the other hand, it does not give any patent protection to the right of propagation of the new variety by seed, irrespective of the degree to which the seedlings come true to type.

On July 23, 1965, a presidential commission was appointed to review the operation of the United States patent system. It spent eighteen months accomplishing this review. Patent Law Revision Hearings, Subcommittee on Patents, Trademarks, and Copyrights, Senate Judiciary Committee, 90th Cong. 2nd Sess., 1968, Part 3, p. 648. One recommendation of the presidential commission was that all provisions in the patent law for plant patents be deleted. *Id.*[5] The U.S. Department of Agriculture opposed a proposed amendment to expand the coverage of 35 U.S.C. §§ 161-164 to include sexual reproduction of

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[5] The record of the 1968 Patent Law Revision Hearings, *supra*, states at Part 3, p. 648:

> While the commission acknowledges the valuable contribution of plant breeders, it does not consider the patent system the proper vehicle for the protection of such subject matter regardless of whether the plants reproduce sexually or asexually.

plants. *Id.* at 715.[6] These references are offered only to remind us of the extent of the continuing political debate that preceded the passage of the 1970 PVPA. Ultimately the interest groups involved in the debate received a political resolution of their positions in the form of passage of the PVPA. It is exactly this type of debate that is avoided by the administrative and judicial amendment of § 101 that reinserts "plants" without the asexual reproduction limitation imposed by Congress in 1930 and again in 1952.

When Congress enacted the PVPA in 1970 it declared its intent that Title 35 did not confer patent protection that covered sexual reproduction of plant varieties when it stated at page 1 of House Report No. 91-1605, 91st Cong., 2nd Sess. 1970, U.S.C.C.A.N. 5082, October 13, 1970, under "Purpose":

> Under patent law, protection is presently limited to those varieties of plants which reproduce asexually, that is, by such methods as grafting or budding. No protection is available to those varieties of plants which reproduce sexually, that is, generally by seeds. Thus, patent protection is not available with respect to new varieties of most of the economically important agricultural crops, such as cotton or soybeans.

The 1970 PVPA Senate Judiciary Committee's Report No. 91-1246 likewise made it clear that Title 35 did not provide protection for sexually reproducing plant varieties and that the absence of any federal patent-type

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[6] The U.S. Department of Agriculture's statement at Part 3, p. 716, of the 1968 Patent Law Revision Hearings, *supra*, states:

> Our second ground of objection to the proposed amendment stems from the fundamental differences between vegetative or asexual reproduction of plants and the reproduction of plants by seed. It is also because of these differences that patenting can be a satisfactory medium only for the protection of asexually reproduced plants.

protection for such varieties necessitated Congress' enactment of the PVPA. Senate Report No. 91-1246 provides at pp. 2-3:

> During the hearings by this committee's Subcommittee on Patents, Trademarks, and Copyrights on the legislation providing for a general revision of the patent laws, consideration was given to an amendment of the plant patent section of the patent law. Under the patent law, patent protection is limited to those varieties of plants which reproduce asexually, that is, by such methods as grafting or budding. *No protection is available to those varieties of plants which reproduce sexually, that is, generally by seeds. Thus, patent protection is not available with respect to new varieties of most of the economically important agricultural crops, such as cotton or soybeans.* The Patent Subcommittee conducted hearings on February 1, 1968, on an amendment to broaden the scope of plant patent protection so as to apply to sexually reproduced plants. A number of objections to this proposal were advanced during the hearings, and no further action in that area has been taken by the subcommittee.
>
> Subsequently, legislation was introduced to encourage the development of novel varieties of sexually reproduced plants by the issuance of certificates of plant variety protection by the Department of Agriculture. S. 3070, to establish such protection, was reported by the Committee on Agriculture and Forestry, and on August 24 this legislation was referred to this committee for the purpose of reviewing its impact on the plant patent statute. *The committee accordingly has examined S. 3070 and finds that it does not alter protection currently available within the patent system. The committee recommends the bill, S. 3070, favorably as amended.* [Emphasis added]

This legislative history is unmistakable. The PVPA was enacted because sexually reproducing plant varieties were not and had never been intended by Congress to be included within the class of things patentable under Title 35.

D. Allowance of § 101 Utility Patents on Plants Creates Irreconcilable Conflicts with the Plant Specific Statutes.

Some examples of the ways the PVPA conflicts with a system built on § 101 utility patents on plants are:

1) research exemption, 7 U.S.C. § 2544 [Pioneer tag prohibits research];

2) crop saving exemption, 7 U.S.C. § 2543 [Pioneer tag prohibits crop saving];

3) standards rendering a plant variety protectable – new, distinct, uniform (to a "commercially acceptable" degree), and stable, 7 U.S.C. § 2402;

4) protection extends to an "essentially derived variety" but not to all varieties derived from the protected variety, 7 U.S.C. § 2401(a)(3) and 7 U.S.C. § 2541(c)(1);

5) establishment of a special office, the Plant Variety Protection Office, to administer the PVPA, 7 U.S.C. § 2321, 2323;

6) establishment of the Plant Variety Protection Board consisting of "experts in various areas of varietal development covered by this chapter", which "shall include farmer representation and shall be drawn approximately equally from the private or seed industry sector and from the sector of government or the public", 7 U.S.C. § 2327;

7) infringement acts include:

(a) sexually multiplying the variety "as a step in marketing (for growing purposes) the variety" [not research], 7 U.S.C. § 2541(a)(3);

(b) using the variety "in producing (*as distinguished from developing*) a hybrid or different variety therefrom" (emphasis supplied), 7 U.S.C. § 2541(a)(4) [Pioneer tag states "use . . . for . . . development of a hybrid or different variety of seed is strictly prohibited."];

(c) performing any of the infringing acts specified in § 2541(a) "even in instances in which the variety *is multiplied other than sexually, except in pursuance of a valid United States plant patent*" (emphasis supplied), 7 U.S.C. § 2541(a)(9);

8) infringement does not include performing any act concerning propagating material of any kind of a protected variety that is sold or otherwise marketed with the consent of the owner in the United States *"unless the act involves further propagation of the variety"* (emphasis supplied), 7 U.S.C. § 2541(d);

9) no damages can be recovered against infringer without actual knowledge if protected variety's container is not labelled "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited", 7 U.S.C. § 2567 [Pioneer's tags contain patent warnings but not these specific prominent PVPA notices.]

The Panel at page 7 of its opinion attempted to circumvent the conflicts between § 101 utility patents on sexually reproducing plant varieties and PVPA certificates on those varieties in the following three conclusory sentences (App. 8-9):

> The district court observed, correctly, that the asserted conflict is simply the difference in the rights and obligations imposed by the two statutes. It is not unusual for more than one statute to apply to a legal or property interest. For example, an ornamental design may qualify for

> protection under both copyright and design patent law. The fact that laws are of different scope does not invalidate the laws.

The Panel cited no authority for its position. The cases cited by the district court do not support protection of sexually reproducing plant varieties under both the PVPA and § 101. This is because so-called "dual protection" cannot exist where each federal statute purports to protect the identical attribute of a thing.

The valuable attribute of plants protected under the PVPA is that they can be multiplied by sexual reproduction on a commercially profitable scale. The district court in its order found that Title 35 and the PVPA protect the same right – the right to exclude others from multiplying a protected plant by sexual reproduction.

In *Mazer v. Stein*, 347 U.S. 201 (1954) cited by the district court, the Supreme Court simply held that statuettes having artistic value and that are incorporated in a lamp stand having utility could be proper subjects of copyright to protect the artistic value. 347 U.S. at 214-217. The statuettes/lamp stands were not patented and the issue of their patentability was not decided. 347 U.S. at 217. The *Mazer* Court found it important to explain that: "Unlike a patent, a copyright gives no exclusive right to the art disclosed; protection is given only to the expression of the idea – not the idea itself." 347 U.S. at 217. The copyright statute and Title 35 dealt with two different rights of exclusion. One statute (copyright) protected an identifiable attribute of the stands, while another statute (patent) protected a different identifiable attribute. Hence, there is not "dual" protection accorded by the two federal statutes – both could not be applied to protect the same attribute of an item such as a lamp stand.

The district court and Panel did not address *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976). The *Ropat* court ruled that, while a design patent and a utility patent may be issued under Title 35 on the same construction, each patent must claim a separate, distinct patentable invention. Dual patents cannot be issued "if

the feature in which the novel esthetic effect resides is the identical feature which produces the novel function so that a structure embodying the mechanical invention would of necessity embody the design, and vice versa." *Id.* at 381.

Congress itself later expressed its intent that a copyright and a design patent could not be issued to protect the same construction. The Copyright Act provides at 17 U.S.C. § 101:

> [T]he design of a useful article, as defined in this section, shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from and are capable of existing independently of, the utilitarian aspects of the article.

Dual protection of the same invention is exactly what the Panel approved. Its order impermissibly allows statutory protection under the PVPA for the right to multiply a plant variety by sexual reproduction while simultaneously allowing statutory patent protection under Title 35 for the same right to multiply a plant variety by sexual reproduction. If a Title 35 utility patent and a Title 35 design patent cannot be allowed to provide protection for the same attribute of an invention (see *Ropat*), then a Title 35 utility patent certainly cannot be issued to provide protection for the same valuable attribute of the same invention that is protected by a separate and more specific statute (the PVPA).

II.

THE QUESTION PRESENTED IS IMPORTANT

The Federal Circuit's ruling expands the patent issuing authority of the PTO beyond that granted by Congress in the agency's enabling statute, 35 U.S.C. § 101.

Such questions involving statutorily unauthorized exercise of power by an agency are important questions worthy of the grant of a writ of certiorari. In the present case the entire statutory scheme designed by Congress to provide a federal statutory right to exclude others from sexually reproducing a plant variety, or using or selling plants so reproduced, has been thwarted.

This Court explained the purpose and function of the PVPA in *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 181 (1995):

> In 1970, Congress passed the Plant Variety Protection Act (PVPA) 84 Stat. 1542, U.S.C. § 2321 et seq., in order to provide developers of novel plant varieties with "adequate encouragement for research, and for marketing when appropriate, to yield for the public the benefits of new varieties." § 2581. The PVPA extends patent-like protection to novel varieties of sexually reproduced plants (that is, plants grown from seed) which parallels the protection afforded asexually reproduced plant varieties (that is, varieties reproduced by propagation or grafting) under Chapter 15 of the Patent Act. See 35 U.S.C. §§ 161-164.
>
> The developer of a novel variety obtains PVPA coverage by acquiring a certificate of protection from the Plant Variety Protection Office. See 7 U.S.C. §§ 2421, 2422, 2481-2483. This confers on the owner the exclusive right for 18 years [now 20 years, again paralleling the scope of protection under Title 35] to "exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing (as distinguished from developing) a hybrid or different variety therefrom." § 2483.

The nation's large cash crops such as soybeans, cotton, corn, wheat and rice all require use of sexual reproduction (seeds) in order to produce crops in commercial

quantities because they must be replanted each year. Even plants such as bushes, trees and flowers that can be commercially produced by use of asexual reproduction make use of sexual reproduction in plant breeding research to develop new plants that are then asexually reproduced.

Farmers across the nation are now being sued for patent infringement for saving seed to replant on their own farms. This is not a violation of the PVPA. *Asgrow Seed Co. v. Winterboer*, 513 U.S. at 190-191. George Washington wrote: " . . . it is miserable for a farmer to be obliged to buy his seeds; to exchange seeds may, in some cases, be useful, but to buy them after the first year is disreputable." (George Washington to farm manager William Pierce, November 16, 1791.) The 1994 PVPA Amendments House Report (Agricultural Committee) No. 103-699, Aug. 12, 1994 (To accompany H.R. 2927), states in Section 10, p. 17:

SECTION 10-RIGHT TO SAVE SEED;
CROP EXEMPTION

* * *

> It is not the intent of the Committee that deletion of the provision allowing the sale of saved seed to be viewed as a step toward the eventual end to the traditional right of farmers to save seed for use on their own holdings. During the UPOV negotiations, many representatives to the UPOV conference asserted that farmers in their countries had a traditional right to save seed for their own use and that removal of this right would likely preclude some non-member countries, currently considering joining, from doing so. Retention of the farmers' exemption is an attempt to balance the varying interests of U.S. companies and producers, as well as to strengthen acceptance of plant breeders rights internationally.

The Federal Circuit's ruling, however, puts an end to the traditional right to save seed.

The agricultural industry has gone through a period of intense economic consolidation. Allowing twenty year utility patent protection of plants with no exemption for plant breeding research by sexual reproduction greatly increases the consolidation of plant gene pools, contrary to the intent of Congress in enacting the PVPA. 7 U.S.C. § 2544. Now a person or company wishing to engage in plant breeding research must take into account the risk of becoming embroiled in a patent infringement lawsuit. A plant's DNA can be viewed as a storehouse of information that can be communicated by RNA messages that can manifest themselves in the characteristics of an offspring plant. Without the ability to do research involving sexual reproduction, the plant's DNA storehouse of information remains locked.

Arguments such as these should be heard by Congress before amending Title 35 and the PVPA to endorse § 101 utility patents on plants. The question presented is important to farmers and small seed companies that must buy seed subject to § 101 utility patents, and to plant breeding researchers. The question presented deserves to be heard by this Court.

CONCLUSION

For the reasons set forth above, the petition for a writ of certiorari should be granted.

Respectfully Submitted,

BRUCE E. JOHNSON
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APPENDIX

United States Court of Appeals for the Federal Circuit

99-1035

PIONEER HI-BRED INTERNATIONAL, INC.,

Plaintiff-Appellee,

v.

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED AND CHEMICALS,

Defendants-Appellants.

Edmund J. Sease, Zarley, McKee, Thompte, Voorhees & Sease, P.L.C., of Des Moines, Iowa, argued for plaintiff-appellee. With him on the brief was *Daniel J. Cosgrove*. Of counsel on the brief was *Herbert H. Jervis*, Vice President & Chief Intellectual Property Counsel, Pioneer Hi-Bred International, Inc., of Johnston, Iowa.

Bruce E. Johnson, Lewis, Webster, Johnson, Van Winkle & DeVolder, L.L.P., of Des Moines, Iowa, argued for defendants-appellants. With him on the brief was *S. P. DeVolder*.

Warren D. Woessner, Schwegman, Lundberg, Woessner & Kluth, P.A., of Minneapolis, Minnesota, for amicus curiae American Intellectual Property Law Association.

Appealed from: U.S. District Court for the Northern District of Iowa

Senior Judge Donald E. O'Brien

United States Court of Appeals for the Federal Circuit

99-1035

PIONEER HI-BRED INTERNATIONAL, INC.,

Plaintiff-Appellee,

v.

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED AND CHEMICALS,

Defendants-Appellants.

DECIDED: January 19, 2000

Before MAYER, *Chief Judge*, NEWMAN and LOURIE, *Circuit Judges*.

NEWMAN, *Circuit Judge*.

The defendants in this patent infringement suit are J.E.M. Ag Supply, Inc. (doing business as Farm Advantage, Inc.), Larry Benz, Merle Pruett (doing business as Siouxland Seeds, Inc.), Kevin Wolfswinkel, Tim Kamstra, and Tom Eischen Seed & Chemicals. The patents in suit, owned by Pioneer Hi-Bred International, Inc., are directed to plants and seed for new varieties of hybrid and inbred corn. The United States District Court for the Northern District of Iowa, denying the defendants' motion for summary judgment, ruled that seeds and

plants grown from seed, that is, sexually reproduced plants, are patentable subject matter within the scope of 35 U.S.C. §101.[1] On interlocutory appeal of the denial of summary judgment under 28 U.S.C. §1292(b)[2], we affirm the district court's ruling.

DISCUSSION

The district court held that the Supreme Court in *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 206 USPQ 193, 197 (1980), in stating that "Congress intended statutory subject matter to 'include anything under the sun that is made by man,' " (quoting S.Rep. No. 1979 at 5 (1952)), confirmed that there is no basis in law for excluding living things, in this case seeds and seed-grown plants and parts thereof, from the subject matter included in §101:

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[1] *Pioneer Hi-Bred Int'l, Inc. v. J.E.M. Ag Supply, Inc.*, No. C 98-4016-DEO (N.D. Iowa Aug. 19, 1998).

[2] § 1292. Interlocutory decisions

(b) When a district judge, in making in a civil action an order not otherwise appealable under this section, shall be of the opinion that such order involves a controlling question of law as to which there is substantial ground for difference of opinion and that an immediate appeal from the order may materially advance the ultimate termination of the litigation, he shall so state in writing in such order. The Court of Appeals which would have jurisdiction of an appeal of such action may thereupon, in its discretion, permit an appeal to be taken from such order. . . .

Pioneer's petition for permission to appeal was granted by order dated October 27, 1998 (unpublished).

> **35 U.S.C. §101** Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

In *Chakrabarty* the Court dealt directly with this provision, responding to the arguments concerning patentability of Dr. Chakrabarty's new bacterium that was engineered to consume oil spills. The Court explained that the patent system is directed to the inventive works of mankind, and is not otherwise limited: "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308, 206 USPQ at 197.

The defendants do not dispute that the subject matter of the patents in suit is within the scope of the *Chakrabarty* decision; their argument is that this decision does not apply to plants because plants were intended to be excluded from the patent system, as evidenced by the enactment of other statutes to provide protection to plants. Thus the defendants argue that seeds and seed-grown plants are excluded from Title 35 and may be protected only under the Plant Variety Protection Act, 7 U.S.C. §2321 *et seq.*

The district court observed that the Patent and Trademark Office has been granting patents on new and unobvious varieties of seed-grown plants for at least fifteen years. In *In re Hibberd*, 227 USPQ 443, 444 (Bd. Pat. App & Interf. 1985) the Board confirmed this PTO position, rejecting the argument that "the plant-specific Acts (PPA

[Plant Protection Act] and PVPA [Plant Variety Protection Act]) are the exclusive forms of protection for plant life covered by those acts." Although the defendants criticize *Hibberd*, the district court reached the same conclusion as did the Board. Indeed, the "increasing adaptation [of the patent laws] to the uses of society" was remarked by the Court a century earlier, in *Kendall v. Winsor*, 62 U.S. (21 How.) 322, 328 (1859).

The district court discerned no historical basis for excluding seed-grown plants from the scope of §101, referring to the Supreme Court's explanation of why plants were not previously deemed to be patentable: first, plants are "products of nature," and second, plants could not be described with sufficient precision to satisfy the written description requirement of the patent statute. *Chakrabarty*, 447 U.S. at 311, 206 USPQ at 198. Now, however, mankind is learning how to modify plants in ways unknown to nature. In addition, precision of description is no longer an insurmountable obstacle, due both to rules authorizing the deposit of new species in publicly available depositories, and advances in botanical understanding and analysis. The Court, cognizant of advances in science, has ratified the traversal of these past impediments to the compass of §101. Although there remain the traditional categories that have never been viewed as patentable subject matter, *viz.*, laws of nature, natural phenomena, and abstract ideas, the policy underlying the patent system fosters its application to all areas of technology-based commerce.

On appeal, the defendants argue that the history of plant protection legislation shows that plants were never

intended to be included in the patent statute. The defendants state that the existence of the PPA and the PVPA precludes application to plants of 35 U.S.C. §101, citing the rule of construction that a general statute must give way to a specific one. *See Fourco Glass Co. v. Transmirra Prods. Corp.*, 353 U.S. 222, 228-29, 113 USPQ 234, 237 (1957) ("specific terms prevail over the general in the same or another statute which otherwise might be controlling"). The defendants argue that the *Chakrabarty* decision can not overtake this rule of statutory construction, and thus that the Court's interpretation of §101 does not apply to plants because there are statutes specific to plant protection.

The district court viewed *Chakrabarty* as resolving the uncertainty that previously existed as to the patentability of living things, and concluded that there is no impediment to reading all of the statutes concerning plant protection in harmony. *See Radzanower v. Touche Ross & Co.*, 426 U.S. 148, 155 (1976) ("when two statutes are capable of co-existence, it is the duty of the courts . . . to regard each as effective"). Thus the district court concluded that a person who develops a new plant variety may have recourse either to patenting under Title 35 or to registration under the PVPA.

The first statute that related specifically to plant protection was the Townsend-Purnell Plant Patent Act of 1930 (PPA), codified at 35 U.S.C. §§161-164. This statute provided patent protection for asexually reproduced plants, and relaxed the written description requirement to accommodate the then-available modes of describing plant varieties:

§161. Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

The provisions of this title relating to patents for inventions shall apply to patents for plants, except as otherwise provided.

§162. No plant patent shall be declared invalid for noncompliance with section 112 of this title if the description is as complete as is reasonably possible.

The claim in the specification shall be in formal terms to the plant shown and described.

The Patent and Trademark Office rules provide that the description requirement may be met by a color photograph, identification of the origin or parentage of the plant, and a detailed description of the plant's distinguishing characteristics. *See* MPEP §1605. Thus was resolved the principal concern that had inhibited access of plants to the patent system.

The 1930 Act did not include seed-grown plants. In 1970 the Plant Variety Protection Act established a form of protection for new varieties of seed-grown and tuber propagated plants. The Act does not include the extensive examination system that is applied to applications for patents, contains several provisions specific to agricultural crops, and is administered by the Department of Agriculture. The basic requirements are as follows:

> **7 U.S.C. §2402(a).** The breeder of any sexually reproduced or tuber propagated plant variety (other than fungi or bacteria) . . . shall be entitled to plant variety protection for the variety, subject to the conditions and requirements of this chapter, if the variety is – (1) new . . . (2) distinct . . . (3) uniform . . . and (4) stable. . . .

The defendants point out that at the time of enactment of the PVPA Congress believed that seed-grown plants were not included in the patent statute, and argue that §101 can not now be interpreted as available to seed-grown plants, when Congress believed otherwise. A similar argument was presented by Justice Brennan in his dissent from the *Chakrabarty* decision. Dissenting opinions are often helpful in showing positions that were not adopted by the court. However, they are not the law.

The Court in *Chakrabarty* responded to the objection to patenting living things by stating that "Congress is free to amend §101 so as to exclude from patent protection organisms produced by genetic engineering. . . . Or it may choose to craft a statute specifically designed for such living things." 447 U.S. at 318, 206 USPQ at 201. The defendants argue that this is what Congress did in the PVPA. However, the PVPA does not purport to remove plants from the patent statute. Neither Congress nor the courts excluded new plant varieties from the patent statute; the enactment of the PVPA did not effect such an exclusion.

The defendants also object that Pioneer has obtained patents under Title 35 as well as certificates under the PVPA, and state that these statutes are in conflict. The

district court observed, correctly, that the asserted conflict is simply the difference in the rights and obligations imposed by the two statutes. It is not unusual for more than one statute to apply to a legal or property interest. For example, an ornamental design may qualify for protection under both copyright and design patent law. The fact that laws are of different scope does not invalidate the laws.

The defendants cite *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 36 USPQ2d 1673 (Fed. Cir. 1995), for its explanation of the scope of the PPA and the PVPA. At issue in *Imazio* was the meaning of the term "variety" as used in the PPA, and the resulting scope of protection afforded by that act. There was no issue in *Imazio* of the scope of §101 or its relationship to either the PPA or the PVPA.

The defendants also argue that the specifications of Pioneer's patents are not enabling; they criticize the written description and the utility of the deposits, and generally challenge validity. These issues were not decided by the district court, and are not before us. We have carefully considered all of the arguments presented; they do not show error in the district court's ruling, and they do not overcome the *Chakrabarty* decision's confirmation of the inclusion in §101 of the subject matter of the patents in suit.

We conclude that patentable subject matter under 35 U.S.C. §101 includes seeds and seed-grown plants.

AFFIRMED

Costs to Pioneer, Fed. Cir. Rule 39(a).

NOTE: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public order.

United States Court of Appeals for the Federal Circuit

MISCELLANEOUS DOCKET NO. 563

PIONEER HI-BRED INTERNATIONAL, INC.,

Plaintiff-Respondent,

v.

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.). FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED AND CHEMICALS,*

Defendants-Petitioners.

ON PETITION FOR PERMISSION TO APPEAL

Before CLEVENGER, SCHALL and GAJARSA, *Circuit Judges*.

CLEVENGER, *Circuit Judge*.

ORDER

(Filed Oct. 27, 1998)

J.E.M. AG Supply, Inc. et al. petition for permission to appeal the order of the United States District Court for the Northern District of Iowa as one involving a controlling issue of law as to which there is substantial ground for difference of opinion and of which an immediate appeal may materially advance the ultimate termination

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* The official caption is revised to correct a typographical error.

of the litigation. *See* 28 U.S.C. § 1292(b), (c)(1). Pioneer Hi-Bred International, Inc. opposes.

Pioneer filed a patent infringement action against J.E.M. AG Supply involving various patents for sexually reproducing corn seed products. J.E.M. AG Supply counterclaimed that the patents in question were invalid because sexually reproducing plants are exclusively protectable under the Plant Variety Protection Act, 7 U.S.C. § 2321 et seq. rather than patentable under the general patent statute, 35 U.S.C. § 101. On August 19, 1998, the district court denied J.E.M. AG Supply's summary judgment motion on the issue of patent invalidity. On August 31, 1998, the district court certified that issue for interlocutory appeal.

An otherwise unappealable, interlocutory order may be reviewed by this court if a district court certifies the order pursuant to 28 U.S.C. § 1292(b), (c)(1) and this court grants a party's petition for permission to appeal the order. This court determines for itself whether it will grant permission to appeal an interlocutory order pursuant to that provision. *See in re Convertible Rowing exerciser Patent Litig.*, 903 F.2d 822 (Fed. Cir. 1990). Such a ruling is within this court's complete discretion. *See id.* Before the district court, the parties did not dispute the facts, and the district court specifically stated that the issue involved in the summary judgment motion was a purely legal one. Upon consideration of the district

court's orders and the parties' submissions, we determine in our discretion that granting the petition is warranted.

Accordingly,

IT IS ORDERED THAT:

J.E.M. AG Supply's petition for permission to appeal is granted.

FOR THE COURT

/s/ Raymond C. Clevenger, III
Raymond C. Clevender, III
Circuit Judge

OCT 27 1998
Date

cc: Bruce E. Johnson, Esq.
Edmund J. Sease, Esq.

IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF IOWA WESTERN DIVISION

PIONEER HI-BRED INTERNATIONAL, INC., Plaintiff,	*	NO. C 98-4016-DEO
vs.	*	**ORDER**
J.E.M. AG SUPPLY, INC., d/b/a FARM ADVANTAGE, INC.; FARM ADVANTAGE, INC.; LARRY BENZ; MERLE PRUETT d/b/a SIOUXLAND SEEDS, INC., KEVIN WOLFSINKEL; TIM KAMSTRA; and TOM EISCHEN SEED AND CHEMICALS, Defendants.	*	(Filed Aug. 19, 1998)

This matter comes before the Court on the defendants' Motion for Summary Judgment pursuant to Federal Rule of Civil Procedure 56. The parties briefed the issues and a hearing was held. After careful consideration of the parties written and oral arguments, the defendants' motion for summary judgment is denied.

I. INTRODUCTION

A. Factual Background

Although this matter is before the Court on a motion for summary judgment, the parties do not assert that we decide a factual issue, but the issue of whether or not the Plant Variety Protection Act is the exclusive federal statutory mechanism for granting patent like protection for sexually reproducing plants to the exclusion of the general patent law. Therefore, the Court will consider the present motion in the context of the following, essentially undisputed facts.

Plaintiff Pioneer Hi-Bred International, Inc. (Pioneer) is a corporation organized and existing under the laws of the State of Iowa, with a principal place of business in Johnston, Iowa. Pioneer is the world's largest seed corn producer. The principal defendant Farm Advantage is a family-owned full service agricultural supply business located in Clariton, Iowa. The other defendants are corporations or residents of the State of Iowa and are distributors for Farm Advantage.

Pioneer has obtained seventeen patents which cover the manufacture, use, sale, and offer for sale of hybrid and inbred corn seed products that are the subject of this suit. A table showing each hybrid, and the patents associated with that specific hybrid, as well as the issue date for each of those patents, is contained in paragraph 13 of the Pioneer's complaint and is incorporated by reference into this order. These seventeen "patents-in-suit" cover sexually reproducing corn plants. Since the issue date of each of the seventeen patents referenced in paragraph 13 of Pioneer's complaint, Pioneer has proceeded on the theory

that it is the owner of all right, title, and interests therein, including the right to sue for infringement for all times material to this case. Pioneer sells products under the aforementioned patents under a limited label license which does not allow for resale, but solely for use "to produce grain and/or forage." No other licenses have been granted to the defendants as buyers of Pioneer seed corn.

The defendants, none of which are authorized Pioneer Sales Representatives, have, from Pioneer's point of view, been infringing on one or more of the seventeen patents-in-suit by making, using, and selling, or offering for sale seed corn of the above-referenced hybrids. Pioneer has placed the required statutory notice on all bags and containers of hybrid seeds, which have been manufactured and sold by Pioneer under the letters of patent.

The seed purchased by the defendants has not been removed from the Pioneer bags and the markings on the Pioneer bags have not been altered. Further, the defendants have not rebagged any Pioneer seed in a different bag, unless it was done in connection with defense of this lawsuit for the purpose of providing examples of bags. None of the defendants have represented that they are a party to any dealer contract with Pioneer.

B. Procedural Background

Pioneer filed suit against the defendants for infringement of the seventeen patents identified above. Each of the defendants have filed answers denying Pioneer's allegations

and asserting, among other defenses, the defense of patent invalidity. Farm Advantage, in its answer, has also asserted a counterclaim asking for judgment declaring that all of Pioneer's patents listed in its complaint be found to be invalid. Farm Advantage has moved, and the other defendants have joined in, for summary judgment on its counterclaim. The only issued raised by the defendants in the motion for summary judgment is whether 35 U.S.C. § 101 confers upon the United States Patent and Trademark Office (PTO) statutory authority to grant patents on sexually reproducing plants, or whether the Plant Variety Protection Act (PVPA) of 1970, 7 U.S.C. § 2321, *et seq.*, provides exclusive federal statutory mechanism for granting patent-like protection for sexually reproducing plants. In their motion, the defendants concede that a patent, once issued, is presumed valid. *See* 35 U.S.C. § 282. However, the defendants argue that sexually reproducing plants, like the ones covered in the patents-in-suit, are not patentable subject matter under § 101. The defendants contend the PTO granted the seventeen patents-in-suit "on the basis of an erroneous understanding of the applicable law." *Thomson Industries, Inc. v. Nippon Thompson Co.*, 298 F. Supp. 466, 475 (E.D. N.Y. 1968).

Pioneer has resisted the motion for summary judgment and argues that the seventeen patents-in-suit were properly granted under 35 U.S.C. § 101 (utility patents) as they are appropriate statutory subject matter eligible for protection. Pioneer asserts that in addition to 35 U.S.C. § 101, the authority for granting utility patents on sexually reproducing plants is *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Application of Bergy*, 596 F.2d 952 (C.C.P.A. 1979), and the PTO holding in *Ex parte Hibberd*, 227 U.S.P.Q. 443 (PTO bd. App. & Int. 1985). Pioneer contends

since the PTO's ruling in *Hibberd*, the PTO has routinely issued well over one thousand utility patents related to plants. Pioneer asserts that utility patents for sexually reproducing plants have become commonplace, not because of changes to the statutory provisions of § 101, but rather because technological advances have been made to allow plant inventors to satisfy the legal requirement for statutory subject matter. *See generally Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (recognizing statutory subject matter to include "anything under the sun made by man."). Finally, Pioneer asserts that because Congress has not clearly and expressly excluded sexually reproduced plants from § 101, there is no reason to read into Congress's past actions an intent to modify the plain meaning of the statute. *See* 35 U.S.C. § 112; *Chakrabarty*, 447 U.S. at 314; *Imazio Nursery v. Dania Greenhouse*, 69 F.3d 1560, 1563-64 (Fed. Cir. 1995).

As mentioned, the Court heard oral arguments on the defendants motion for summary judgment. At the conclusion of the oral arguments, the Court directed the respective parties to file a proposed order on the issue raised, which each party has done. The Court has reviewed and considered the proposed orders in reaching its decision.

II STANDARDS FOR SUMMARY JUDGMENT

A. General Standards for Summary Judgment

The Eighth Circuit Court of Appeals recognizes "that summary judgment is a drastic remedy and must be exercised with extreme care to prevent taking genuine issues of fact away from juries." *Wabun-Inini v. Sessions*, 900 F.2d 1234, 1238 (8th Cir. 1990). On the other hand, the

Federal Rules of Civil Procedure have authorized for nearly 60 years "motions for summary judgment upon proper showings of the lack of a genuine, triable issue of material fact." *Celotex Corp. v. Catrett*, 477 U.S. 317, 327 (1986). Thus, "summary judgment procedure is properly regarded not as a disfavored procedural shortcut, but rather as an integral part of the Federal Rules as a whole, which are designed 'to secure the just, speedy and inexpensive determination of every action.' " *Wabun-Inini*, 900 F.2d at 1238 (quoting *Celotex*, 477 U.S. at 327); *Hartnagel v. Norman*, 953 F.2d 394, 396 (9th Cir. 1992).

The standard for granting summary judgment is well established. Rule 56 of the Federal Rules of Civil Procedure provides, in relevant part:

> Rule 56. Summary Judgment
>
> (a) For Claiment. A party seeking to recover upon a claim, counterclaim, or cross-claim or to obtain a declaratory judgment may, at any time after the expiration of 20 days from the commencement of the action or after service of a motion for summary judgment by the adverse party, move with or without supporting affidavits for a summary judgment in the party's favor upon all or any part thereof.
>
> (b) For Defending Party. A party against whom a claim, counterclaim, or cross-claim is asserted or a declaratory judgment is sought may, at any time, move with or without supporting affidavits for a summary judgment in the party's favor as to all or any part thereof.
>
> (c) Motions and Proceedings Thereon. . . . The judgment sought shall be rendered forthwith if the pleadings, depositions, answers to

> interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law.

Fed. R. Civ. P. 56(a)-(c); *see also Celotex*, 477 U.S. at 322-23; *Wabun-Inini*, 900 F.2d at 1238 (citing Fed. R. Civ. P. 56(c)).[1] However, the present motions for summary judgment require a somewhat narrower analysis than is the norm.

B. Primary Legal Questions

Ordinarily, analysis of a motion for summary judgment focuses on whether there are genuine issues of material fact that preclude summary judgment in the movant's favor, because they require submission of the case to a trier of fact. *See Coonley v. Fortis Benefit Ins. Co.*, 956 F. Supp. 841, 844 (N.D. Iowa 1997). *See generally, Celotex*, 477 U.S. at 323 (if the nonmoving party fails to make a sufficient showing of an essential element of a claim with respect to which it has the burden of proof, then the moving party is "entitled to judgment as a matter of law."). However, in the present case, the defendants have moved for summary judgment on the ground that there are no genuine issues of material fact. This is a

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[1] An issue of material fact is genuine if it has a real basis in the record. *Hartnagel*, 953 F.2d at 394 (citing *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586-87 (1986)). "Only disputes over facts that might affect the outcome of the suit under the governing law will properly preclude the entry of summary judgment." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986).

narrow question of statutory interpretation/construction. Thus, the analysis in this case will focus on the final clause of the quoted portion of Rule 56(c), that is, on whether "the moving party is entitled to judgment as a *matter of law.*" Fed. R. Civ. P. 56(c) (emphasis added).

In *Coonley,* Judge Bennett recognized that primarily legal issues generally are issues amenable to summary disposition. *Coonley,* 956 F.Supp. at 844; *accord Mansker v. TMG Life Ins. Co.*, 54 F.3d 1322, 1326 (8th Cir. 1995) (in an ERISA plan interpretation case, the court observed, "Where the unresolved issues are primarily legal rather than factual, summary judgment is particularly appropriate."); *Mumford v. Godfried*, 52 F.3d 756, 759 (8th Cir. 1995) ("Where the unresolved issues are primarily legal rather than factual, summary judgment is particularly appropriate."). Similarly, this Court now concludes that statutory interpretation – particularly interpretation of the authority of a statute where facts are undisputed – is primarily a legal question amenable to summary judgment. *See, e.g., United States v. Carr,* 66 F.3d 981, 983 (8th Cir. 1995) (statutory interpretation is a question of law reviewed de novo); *United States v. Moore,* 38 F.3d 977, 979 (8th Cir. 1994) (the task of statutory interpretation "is one best placed in the hands of the trial judge," because it is a question of law); *United States v. Brummels,* 15 F.3d 769, 771 (8th Cir. 1994) (explaining that, while findings of fact is reviewed for clear error, "[a]s to application of facts to the legal interpretation of [a statute], the standard of review is de novo"). Thus, because the issues before the court are essentially legal – statutory interpretation – and do not turn on the existence or non-existence of a genuine

issue of material fact, summary disposition may be particularly appropriate. *See Coonley,* 956 F.Supp. at 845.

III LEGAL ANALYSIS

A. The Broad Language of 35 U.S.C. § 101

The Court's legal analysis centers on the question, whether utility patents for sexually reproduced plants fall within the subject matter protected by 35 U.S.C. § 101, which provides:

> Whoever invents or discovers any new and useful process machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefo [sic], subject to the conditions and requirements of this title.

"[I]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Chakrabarty,* 447 U.S. at 308. Section 101 is not to be strictly construed. *Application of Bergy,* 596 F.2d at 974.

For many years the words of § 101 have been liberally construed to include the most diverse range of imaginable and unforseen developments in technology. As the drafter of the 1952 Patent Act, Judge Rich, now of the Federal Circuit, suggested:

> [T]he Founding Fathers and the Congresses of the past century could not have foreseen the technologies that have allowed man to walk on the moon, switch travel from the railroads to heavier-than-air craft, fill our houses with color

> TV, cure normally fatal diseases with antibiotics produced by cultures of molds (microorganisms), and give to school children at small cost pocket calculators with which they can produce square roots in microseconds through complex electronic circuitry on an 'IC' (integrated circuit) so small the circuits are not visible to the naked eye.

Id. The subject matter provisions have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all the means for the social and economic benefits envisioned by the Framers. U.S. Const., art. I, § 8, cl. 8. An example of how the language of § 101 is sufficiently broad to accommodate technology encompassed within its scope is shown by the Supreme Court's recognition of living organisms as patentable subject matter in *Chakrabarty*. In view of the Supreme Court's decision in *Chakrabarty*, it appears clear that the scope of § 101 includes man-made life forms, including plant life.

B. The Effects of the Enactment of the PPA and the PVPA

The defendants argue, however, that by enacting the PPA in 1930 and the PVPA in 1970, Congress has specifically set forth how and under what conditions plant life covered by these Acts should be protected. The defendants contend that the only reasonable statutory interpretation is that the PPA and the PVPA, which were later in time and more specific than § 101, each carved out from § 101, for specific treatment, the subject matter covered by each. Thus, as mentioned, it is the defendants

position that the plant-specific acts (PPA and PVPA) are the exclusive federal statutory mechanisms for plants covered by those acts.

1. The language of the statutes

In cases of statutory construction, the Court begins with the language of the statutes. The language of § 101 has been set forth above and has been interpreted, as mentioned, by the Supreme Court to include everything under the sun that it made by man. The defendants do not point to any specific language in the PPA or the PVPA to support its position that these Acts support their position that the PPA and PVPA restrict the scope of the patentable subject matter under § 101. The Court has reviewed each of the provisions of the PPA[2] and the

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[2] The 1930 Townsend-Purnell Plant Patent Act (PPA) is currently found at 35 U.S.C. §§ 161-164. Section 161 of the PPA provides:

> Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuberpropagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title. The provisions of this title relating to patents for inventions shall apply to patents for plants, except as otherwise provided.

35 U.S.C. § 161. Section 162 of the PPA provides:

> No plant patent shall be declared invalid for noncompliance with section 112 of this title if the description is as complete as is reasonably possible.

PVPA[3] and concludes that neither the PAA or the PVPA expressly excludes any plant subject matter from protection under 35 U.S.C. § 101 of the General Patent law. Accordingly, the Court will next look to the legislative histories of the PPA and the PVPA to determine whether there is any clear indication of congressional intent that the specific Acts be exclusive federal statutory mechanisms.

> The claim in the specification shall be in formal terms to the plant shown and described.

35 U.S.C. § 162. Section 163 of the PPA provides:

> In the case of a plant patent the grant shall be of the right to exclude others from asexually reproducing the plant or selling or using the plant so reproduced.

35 U.S.C. § 163. Finally, Section 164 of the PPA provides:

> The President may by Executive order direct the Secretary of Agriculture, in accordance with the requests of the Commissioner, for the purpose of carrying into effect the provisions of this title with respect to plants (1) to furnish available information of the Department of Agriculture, (2) to conduct through the appropriate bureau or division of the Department research upon special problems, or (3) to detail to the Commissioner officers and employees of the Department.

35 U.S.C. § 164.

[3] The 1970 Plant Variety Protection Act is currently found at 7 U.S.C. § 2321, et seq. Due to the number of PVPA provisions, the Court will not, as it did with the PPA, set forth each provision of the PVPA here.

2. The legislative histories

The defendants begin by pointing to Senate Report No. 91-1246, Committee on the Judiciary, September 29, 1970, Plant Variety Protection Act of 1970, page 2, which states:

> This bill as amended provides for the issuance of "certificates of plant variety protection" assuring the developers of novel varieties of sexually reproduced plants of exclusive rights to sell, reproduce import, or export such varieties, or use them in the production (as distinguished from the development) of hybrids or different varieties for a period of 17 years. A Plant Variety Protection Office would be established in the Department of Agriculture to administer the law. Similar protection is now provided for sexually [sic: asexually] reproduced varieties patents issued by the Patent Office. Until the 1930 Townsend-Purnell Plant Patent Act (PPA).

The defendants assert that this report made clear that the general patent law did not provide any protection for sexually reproduced plants and that is why enactment of the PVPA was necessary.

The defendants next point to pages 2 and 3 of Report 91-1246, which states:

> During the hearings by this committee's Subcommittee on Patents, Trademarks, and Copyrights on the legislation providing for a general revision of the patent laws, consideration was given to an amendment of the plant patent section of the patent law. Under the patent law, patent protection is limited to those varieties of plants which reproduce sexually, that is by such

methods as grafting and budding. *No protection is available to those varieties of plants which reproduce sexually, that is, generally, by seeds.* Thus, patent protection is not available with respect to new varieties of most of the economically important agricultural crops, such as cotton or soybeans. The Patent Subcommittee conducted hearings on February 1, 1968, on an amendment to broaden the scope of plant patent protection so as to apply to sexually reproduced plants. A number of objections to this proposal were advanced during the hearins, (sic) and no further action in that area has been taken by the subcommittee.

Subsequently, legislation was introduced to encourage the development of novel varieties of sexually reproduced plants by the instance of certificates of plant variety protection by the Department of Agriculture. S. 3070, to establish such protection, was reported by the Committee on Agriculture and Forestry, and on August 24 this legislation was referred to this committee for the purpose of reviewing its impact on the plant patent statute. *The committee accordingly has examined S. 3070 and finds that it does not alter the protection currently available within the patent system.* The recommends the bill, S. 3070, favorably as amended.

(Emphasis supplied.) The underlined sentence, "No protection. . . . " certainly is hard to construe as saying anything but before we pass this act there has been and is no protection for seed corn. However, it is the Court's understanding that prior to the PVP Act, the Patent Office was issuing patents for plants which reproduce sexually. The confusion is then increased by the second underlined

sentence, "The committee. . . . " The two underlined sentences cannot easily be reconciled. The defendants assert that the above is supportive of their position that prior to 1970 sexually reproducing plants were not patentable subject matter and that Congress found it inadvisable to extend § 101 to include sexually reproducing plants; instead, Congress sought to provide protection under the PVPA.

Finally, the defendants point to 91-1605 (P.L. 91-577, Plant Variety Protection Act), 1970 United States Code Congressional and Administrative News 5082, 1970 WL 5934 (Leg. Hist.), which provides:

PURPOSE

THIS BILL PROVIDES FOR THE ISSUANCE OF 'CERTIFICATES OF PLANT VARIETY PROTECTION' ASSURING THE DEVELOPERS OF NOVEL VARIETIES OF SEXUALLY REPRODUCED PLANTS OF EXCLUSIVE RIGHTS TO SELL, REPRODUCE, IMPORT, OR EXPORT SUCH VARIETIES, OR USE THEM IN THE PRODUCTION (AS DISTINGUISHED FROM THE DEVELOPMENT) OF HYBRIDS OR DIFFERENT VARIETIES, FOR A PERIOD OF 17 YEARS. A PLANT VARIETY PROTECTION OFFICE WOULD BE ESTABLISHED IN THE DEPARTMENT OF AGRICULTURE TO ADMINISTER THE LAW. SIMILAR PROTECTION IS NOW PROVIDED FOR ASEXUALLY REPRODUCED VARIETIES THROUGH PATENTS ISSUED BY THE PATENT OFFICE.

UNDER PATENT LAW, PROTECTION IS PRESENTLY LIMITED TO THOSE VARIETIES OF PLANTS WHICH REPRODUCE ASEXUALLY, THAT IS, BY SUCH METHODS AS GRAFTING OR BUDDING. NO PROTECTION IS AVAILABLE TO THOSE VARIETIES OF PLANTS WHICH REPRODUCE SEXUALLY, THAT IS, GENERALLY BY SEEDS. THUS, PATENT PROTECTION IS NOT

AVAILABLE WITH RESPECT TO NEW VARIETIES OF MOST OF THE ECONOMICALLY IMPORTANT AGRICULTURAL CROPS, SUCH AS COTTON OR SOYBEANS.

(Emphasis supplied.) The underlined again makes it hard to read about the purpose of the Act without drawing the conclusion that the drafters believed there was no protection for plants which reproduce sexually, that is, by seeds. The defendants of course contend that the above portions of the PVPA legislative history makes it clear that there was no patent-like statutory protection for sexually reproducing plants.

The Court has reviewed the legislative histories of the plant-specific Acts, including those above, and finds that there is nothing in those legislative histories from which one could conclude that Congress intended to remove from the already in place protection of § 101 any subject matter already within the scope of that section. Rather, as mentioned, the Senate Committee on the Judiciary stated in their report, as set forth above, that the Plant Variety Protection Act "does not alter protection currently available within the patent system." Sen. Rep. No. 91-246 at 3. This Court, therefore, finds that defendants' analysis of the legislative history of the PPA and PVPA, while persuasive, is not enough for the Court to find conclusively that they are entitled to a summary judgment.

This Court instead, relies on the Supreme Court's analysis in *Chakrabarty* of the legislative history and purpose of the PPA and PVPA in reaching its decision. The Supreme Court in *Chkrabarty* [sic] noted that prior to 1930 there were two obstacles to obtaining patent protection. First, was the belief that plants, even those artificially

bred, were products of nature and thus not proper subjects of patent law. *Chakrabarty*, 447 U.S. at 309. Second, it was thought that plants were not amenable to the "written description" requirement of the patent law. *Id.* The Supreme Court noted that Congress addressed both of these obstacles in enacting the PPA *Id.* at 312. The Supreme Court determined that Congress explained at length its belief that the work of the plant breeder "in the aid of nature" was a patentable invention, and it relaxed the written description requirement in favor of "a description as complete as is reasonably possible." 35 U.S.C. § 162; *Chakrabarty*, 447 U.S. at 311-12. The Supreme Court's analysis makes it clear that the legislative intent of these acts was to extend patent protection to plant breeders who were prevented from obtaining protection by the two noted obstacles. *See id.* at 312.

This Court finds no explicit support in the legislative history for the premise, advanced by the defendants, of an intent to restrict or limit the scope of patentable subject matter available pursuant to 35 U.S.C. § 101. Congress's intention in adopting the PPA and PVPA was to extend patent protection to an area not often able to meet the requirements of 35 U.S.C. § 112, given the then limits of plant science. History demonstrates, however, that in those instances where inventors showed they could define a reproducible plant meeting the limits of § 112, plant patents were issued under § 101. An early example of this is the Boehm patent, U.S. Patent 2,0[illegible]8,056 (1936) (Plaintiff's Exhibit D). Today, the requirements of § 112 can be met through a written description combined with a deposit of the invention as required for some microorganisms. Manual of Patent Examining Procedure

§ 2403.02 (6th ed. 1997). In passing the PVPA and PPA, Congress maintained the broad language of § 101 in order to recognize, reward, and encourage developments in plant breeding that were capable of someday meeting the enablement requirements. *See Chakrabarty*, 447 U.S. at 312-315.

3. An implicit narrowing of 35 U.S.C. § 101

The defendants here argue that there has been an implicit repeal of a portion of 35 U.S.C. 101 because of an irreconcilable conflict between the General Patent Act and the Plant Variety Protection Act. The defendants assert that the [sic] there exists an "irreconcilable conflict" between the PVPA and § 101 which prevents that [sic] two statutes from co-existing. The defendants point to the following provisions of the PVPA which differ from section 101 to show the irreconcilable conflict:

(1) The PVPA contains both research and farmer's crop exemptions (§§ 2543-44), while section 101 does not explicitly contain such exemptions;

(2) The PVPA spells out infringement in great detail and includes a compulsory licensing provision (§ 2541), while no such provision exists under § 101;

(3) The PVPA does not permit a manufacturer to place a limited label license on seed bags or label stating a prohibition against using the seed to multiply or reproduce the variety (§§ 2567-68), where § 101 would permit such a practices [sic].

The Court is persuaded, however, that such differences fall short of what could be required to find an irreconcilable conflict that would mandate a partial repeal of § 101 by implication.

The "cardinal rule" of repeal by implication was set forth by the Supreme Court in *United States v. Borden Co.*, as follows:

> It is a cardinal principle of construction that repeals by implication are not favored. When there are two acts upon the same subject, the rule is to give effect to both if possible. The intention of the legislature to repeal 'must be clear and manifest.' It is not sufficient as was said by Mr. Justice Story in *Wood v. United States*, 16 Pet. 342, 362, 363, 10 L.Ed. 987, 'to establish that subsequent laws cover some or even all of the cases provided for by (the prior act); for they may be merely affirmative, or cumulative, or auxiliary.' There must be 'a positive repugnancy between the provisions of the new law and those of the old; and even then the old law is repealed by implication only, pro tanto, to the extent of the repugnancy.'

308 U.S. 189, 198-199 (1939) (citations omitted). *See also United States v. Davis*, 978 F.2d 415 (8th Cir. 1992) (quoting *Borden*, 308 U.S. at 199); *Ark. State Bank Comm. v. Resolution Trust Corporation*, 911 F.2d 161, 171 (8th Cir. 1990) (same). In absence of such irreconcilable conflict that the statutes cannot co-exist, it is the Court's duty to regard each as effective. *Morton v. Mancari*, 417 U.S. 535, 551 (1973) (holding "courts are not at liberty to pick and choose among congressional enactments, and when two statutes are capable of coexistence, it is the duty of the

courts, absent clearly expressed congressional intention to the contrary, to regard each as effective."). "Simply because a later enacted statute affects in some way an earlier enacted statute is poor reason to ask [a court] . . . to rewrite the earlier statute" *Roche Products, Inc. v. Bolar Pharmaceutical Co.*, 733 F.2d 858, 862 (Fed. Cir. 1984).

The analysis by the defendants in their motion for summary judgment as to the differences between the PVPA and the General Patent Act fall far short of what would be required to find an irreconcilable conflict or positive repugnancy for two reasons. First, the analysis of the defendants merely serves to indicate that there are differences in the scope of protection offered by § 101 and the PVPA. The differences laid out above demonstrate that the scope of § 101 is much broader than the scope of protection under the PVPA. Thus, there are good reasons, as pointed out by the defendants above, why any applicant may choose § 101 over the PVPA.

Second, the defendants' analysis ignores the important differences between the legal standards that must be satisfied to receive a utility patent and the standard that must be satisfied to obtain a certificate under the PVPA. Section 101, unlike the PVPA, requires that an invention be novel and non-obvious. *See* 35 U.S.C. § 103. The use of "non-obviousness" as a second threshold is what makes the process of obtaining a utility patent under § 101 more difficult. In addition, in return for a utility patent, the inventor must provide sufficient information on the invention "to enable a person skilled in the art . . . to make or use the same." 35 U.S.C. § 112. This requirement can be routinely satisfied by depositing a sample in an

approved repository with unrestricted access. M.P.E.P. 2403.02 (6th ed. 1997). While a deposit of a seed in a public repository is required under the PVPA, there is no enablement requirement under 101 et seq. *See* 7 U.S.C. § 2422. Such a seed deposit does not provide the public with the ability to reproduce the invention because the identity of the parents may be kept a trade secret. There is no secrecy under § 101. When an inventor is willing to make and use has over her invention, then he or she is entitled to the full protection available to subject matter patentable under § 101. Logically, therefore, loss protection should be available when the utility patent "contract" is not completely fulfilled.

The defendants assert that the fact that subject matter patentable under § 101 overlaps with subject matter protectable under the PVPA provides a basis for the Court to conclude there is irreconcilable conflict between the statutes. However, there is ample precedent that the availability of one form of statutory protection does not preclude the availability of protection under another form. *See Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 485-87 (1974) (holding that trade secret and patent protection can "peacefully coexist"); *Mazer v. Stein*, 397 U.S 201, 217 (1954) (concluding that patentability of a manufactured article does not bar copyright as a work of art); *Pioneer Hi-Bred Int'l v. Holden Foundation Seeds*, 35 F.3d 1226 (8th Cir. 1994) (recognizing that the PVPA did not preempt Iowa state trade secret law as applied to sexually reproducing plants); *In re Yardley*, 493 F.2d 1389 (C.C.P.A. 1974) (holding that protection under the copyright statute and the design patent statutes may simultaneously coexist.

The fact that subject matter patentable under § 101 may overlap with subject matter protectable under the PVP [sic] does not provide a basis for concluding that there is irreconcilable conflict.

The Court is well aware that defendants in this case have vilified the case of *Ex Parte Hibberd, et al.*, 227 U.S.P.Q. 443. It is certainly true that it is not a court decision and that some of the things concluded therein are very controversial. However, the decision does make some pertinent statements in relation to whether or not there is an implicit repeal of a portion of Section 101 because of an irreconcilable conflict between the General Patent Act and the Plant Variety Protection Act.

For example, the *Hibberd* Court stated:

> The examiner's contention that Section 101 has been "implicitly narrowed or partially repealed by implication" is not persuasive. The overwhelming weight of authority is to the effect that repeals by implication are not favored and that when they are two acts on the same subject, the rule is to give effect to both unless there is such a "positive repugnancy" or "irreconciliable conflict" that the statutes cannot co-exist *United States v. Borden Co.*, 308 U.S 188, 198 (1939).
>
> When there are two acts upon the same subject, the rule is to give effect to both if possible. . . . The intention of the legislature to repeal must be clear and manifest.
>
> Thus, "courts are not at liberty to pick and choose among congressional enactments and when two statutes are capable of coexistence, it is the duty of the courts absence a clear, express

> congressional intention to the contrary, to regard each as effective.

Ex Parte Hibberd, 227 U.S.P.Q. 443, 446 (P.T.O. Bd. of Pat. & Int. 1985). In further discussing the matter, the *Hibberd* Court said:

> In our view such differences fall far short of what could be required to find an irreconcilable conflict or positive repugnancy that would mandate a partial repeal of Section 101 by implication.

Id.

In the *Application of Malcolm E. Bergy*, 596 F.2d 952, 974 (U.S. Court of Customs, 1979), the Court said:

> We believe Section 101 and its predecessor statutes were broadly drawn in general terms to broadly encompass unforeseeable future developments, as broadly we suggest, as Section 2 of the Sherman Act, 15 U.S.C. § 2. We have been shown no justification for the Bergy board's view that Section 101 must be strictly construed.

Furthermore, in *Chakrabarty*, the Supreme Court stated:

> We have also cautioned that courts "should not read into patent law as limitations and conditions which the legislature has not expressed." . . . The choice we are urged to make as a matter of his policy for resolution within the legislative process after the kind of investigation, examination and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business

> of elected representatives. Whatever their validity, the contentions now pressed on us should be addressed to the political branches of the government, the Congress and the Executive, and not to the courts. . . . Congress is free to amend Section 101 so as to exclude from patent protection organisms produced by genetic engineering, exempting from patent protection inventions, useful solely in the utilization of special nuclear material or atomic energy and atomic weapon." Or it may choose to craft the statute specifically designed for such living things, but until Congress takes such action, this Court must construe the language of Section 101 as it is. The language of that section fairly embraces respondent's invention.

Chakrabarty, 447 U.S. at *317-18*.

For at least the last fifteen years, the law has recognized plant variety patents as statutory subject matter. If in fact *Ex Parte Hibberd* was contrary to the views of Congress, they have had ample time since 1985 to correct this practice.

In the case of *Blue Chip Stance v. Manor Drug Stores*, 421 U.S 723, 733 (1975), the Court discusses a situation where there has been a longstanding acceptance of a reasonable statutory interpretation and concludes that since Congress has failed to reject that longstanding acceptance, the end result is that it is fair to conclude that Congress has no problem with the judicial reading. It has been pointed out to the court that the patent statutes and the Plant Variety Protection Act have been amended at least eighteen times since 1980 alone, but Congress has not amended nor crafted any specific statute limiting the

interpretation that in light of *Chakrabarty*, Section 101 extends utility patent protection to sexually reproduced plants.

The best argument that this Court has found for the proposition that the Plant Variety Protection Act is the sole avenue for the protection of seed corn is in the dissent in *Chakrabarty* where Justice Brennan, after carefully discussing the matter, came to the conclusion:

> The only question we need to decide is whether Congress, exercising its authority under Article I, Section 8, of the Constitution, intended that he be able to secure a monopoly on living organisms himself, no matter how produced or how used.

In discussing this, after recognizing all the arguments put forth by the majority, on pages 320 and 321 Justice Brennan stated:

> First, the Act evidences Congress' understanding, at least since 1930, that Section 101 does not include living organisms. If newly developed living organisms not naturally occurring had been patentable under 101, the plants included in the scope of the 1930 and 1970 acts could have been patented without new legislation . . . Although the Court rejects this line of argument, it does not explain why the Acts were necessary unless to correct a pre-existing situation. I cannot share the Court's implicit assumption that Congress was engaged in either idle exercise or mere correction of the public record when it enacted the 1930 and 1970 Acts and Congress certainly thought it was doing something significant. The committee reports contain

expansive prose about the previously unavailable benefits to be derived from extending patent protection to plants . . . Because Congress though it had to legislate in order to make agricultural "human-made inventions" patentable and because the legislation Congress enacted is limited, it follows that Congress never meant to make items outside the scope of the legislation patentable . . . In footnote 5 he stated if a new act was needed to provide patent protection for the plants, it was equally necessary for bacteria. Yet Congress provided for patents on plants, but not on these bacteria. In short, Congress decided to make only a subset of animate "human-made inventions" patentable . . . The Senate Judiciary Committee report on the 1970 Act states that the Committee's understanding that patent protection extended no further than the explicit provisions of these acts: "Under the patent law, patent protection is limited to those varieties of plants which reproduce asexually, that is, by such method as grafting or budding. No protection is available to those varieties of plants which reproduce sexually, that is, generally by seeds."

As you can see, Justice Brennan gets right to the problem and concludes that prior to the Plant Variety Protection Act, there had been no protection for plants produced from seed.

As mentioned, this Court is persuaded that Justice Brennan has the best argument for finding that the Plant Variety Protection Act is the sole and exclusive method of protecting seed corn. However, his is a dissent; it is not the law of the land, and for all of the reasons set forth previous to this discussion of Justice Brennan's dissent,

this Court is persuaded that it must find that the Plant Variety Protection Act is not the sole and exclusive method of protecting seed corn. It boils down to the fact that it is Congress' job to answer this question. At no place in any of the statutes does it say that seed corn plants cannot be given a patent. At no place in the statutes does it say that you cannot have both patent and PVPA protection. At no place in the law does it say that you have to make an election of one or the other, section 101 or the P.V.P.A.

IV. CONCLUSION

For all of the reasons set out above, the defendants' motion for summary judgment is hereby denied.

August 19, 1998.

/s/ Donald E. O'Brien
Donald E. O'Brien,
Senior Judge
UNITED STATES
DISTRICT COURT

United States Court of Appeals for the Federal Circuit

99-1035

PIONEER HI-BRED INTERNATIONAL, INC.,

Plaintiff-Appellee,

v.

J.E.M. AG SUPPLY, INC.
(doing business as Farm Advantage, Inc.),
FARM ADVANTAGE, INC., LARRY BENZ,
MERLE PRUETT
(doing business as Siouxland Seeds, Inc.),
KEVIN WOLFSWINKEL, TIM KAMSTRA,
and TOM EISCHEN SEED AND CHEMICALS,

Defendants-Appellants.

ORDER

United States Court of Appeals for the Federal Circuit

ORDER

(Filed Mar. 13, 2000)

A petition for rehearing en banc having been filed by the APPELLANTS, and a response thereto having been invited by the court and filed by the APPELLEE, and the matter having first been referred as a petition for rehearing to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on March 20, 2000.

FOR THE COURT,

/s/ Jan Horbaly
Jan Horbaly
Clerk

Dated: March 13, 2000

cc: Bruce E. Johnson
Edmund J. Sease

Warren D. Woessner

PIONEER HI-BRED V JEM AG SUPPLY, 99-1035
(DCT – 98-CV-4016)

46 Stat. 376

1930 PLANT PATENT ACT

SEVENTY-FIRST CONGRESS. SESS. II. CH. 312. 1930.

CHAP. 312. – An Act To provide for plant patents.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That sections 4884 and 4886 of the Revised Statutes, as amended (U. S. C., title 35, secs. 40 and 81), are amended to read as follows:

"SEC. 4884. Every patent shall contain a short title or description of the invention or discovery, correctly indicating its nature and design, and a grant to the patentee, his heirs or assigns, for the term of seventeen years, of the exclusive right to make, use, and vend the invention or discovery (including in the case of a plant patent the exclusive right to asexually reproduce the plant) throughout the United States and the Territories thereof, referring to the specification for the particulars thereof. A copy of the specification and drawings shall be annexed to the patent and be a part thereof.

"SEC. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two

years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor."

SEC. 2. Section 4888 of the Revised Statutes, as amended (U. S. C., title 35, sec. 33), is amended by adding at the end thereof the following sentence: "No plant patent shall be declared invalid on the ground of noncompliance with this section if the description is made as complete as is reasonably possible."

* * *

Approved, May 23, 1930.

1952 PATENT ACT

35 U.S.C. § 101

101. Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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35 U.S.C. § 161

161. Patents for plants

Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuberpropagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

The provisions of this title relating to patents for inventions shall apply to patents for plants, except as otherwise provided.

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35 U.S.C. § 163

163. Grant

In the case of a plant patent the grant shall be of the right to exclude others from asexually reproducing the plant or selling or using the plant so reproduced.

PLANT VARIETY PROTECTION ACT OF 1970

7 U.S.C. § 2402

2402. Right to plant variety protection; plant varieties protectable

(a) In general

The breeder of any sexually reproduced or tuber propagated plant variety (other than fungi or bacteria) who has so reproduced the variety, or the successor in interest of the breeder, shall be entitled to plant variety protection for the variety, subject to the conditions and requirements of this chapter, if the variety is –

(1) new . . .

* * *

(2) distinct, in the sense that the variety is clearly distinguishable from any other variety the existence of which is publicly known or a matter of common knowledge at the time of the filing of the application;

(3) uniform, in the sense that any variations are describable, predictable, and commercially acceptable; and

(4) stable, in the sense that the variety, when reproduced, will remain unchanged with regard to the essential and distinctive characteristics of the variety with a reasonable degree of reliability commensurate with that of varieties of the same category in which the same breeding method is employed.

* * *

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7 U.S.C. § 2541

2541. Infringement of plant variety protection

(a) Acts constituting infringement

Except as otherwise provided in this subchapter, it shall be an infringement of the rights of the owner of a protected variety to perform without authority, any of the following acts in the United States, or in commerce which can be regulated by Congress or affecting such commerce, prior to expiration of the right to plant variety protection but after either the issue of the certificate or the distribution of a protected plant variety with the notice under section 2567 of this title:

(1) sell or market the protected variety, or offer it or expose it for sale, deliver it, ship it, consign it, exchange it, or solicit an offer to buy it, or any other transfer of title or possession of it;

(2) import the variety into, or export it from, the United States;

(3) sexually multiply, or propagate by a tuber or a part of a tuber, the variety as a step in marketing (for growing purposes) the variety;

(4) use the variety in producing (as distinguished from developing) a hybrid or different variety therefrom;

(5) used seed which had been marked "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited" or progeny thereof to propagate the variety;

(6) dispense the variety to another, in a form which can be propagated, without notice

as to being a protected variety under which it was received;

(7) condition the variety for the purpose of propagation, except to the extent that the conditioning is related to the activities permitted under section 2543 of this title;

(8) stock the variety for any of the purposes referred to in paragraphs (1) through (7);

(9) perform any of the foregoing acts even in instances in which the variety is multiplied other than sexually, except in pursuance of a valid United States plant patent; or

(10) instigate or actively induce performance of any of the foregoing acts.

* * *

(d) Acts not considered infringing

It shall not be an infringement of the rights of the owner of a variety to perform any act concerning propagating material of any kind, or harvested material, including entire plants and parts of plants, of a protected variety that is sold or otherwise marketed with the consent of the owner in the United States, unless the act involves further propagation of the variety or involves an export of material of the variety, that enables the propagation of the variety, into a country that does not protect varieties of the plant genus or species to which the variety belongs, unless the exported material is for final consumption purposes.

* * *

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7 U.S.C. § 2543

2543. Right to save seed; crop exemption

Except to the extent that such action may constitute an infringement under subsection (3) and (4) of section 2541 of this title, it shall not infringe any right hereunder for a person to save seed produced by the person from seed obtained, or descended from seed obtained, by authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on the farm of the person, or for sale as provided in this section. A bona fide sale for other than reproductive purposes, made in channels usual for such other purposes, of seed produced on a farm either from seed obtained by authority of the owner for seeding purposes or from seed produced by descent on such farm from seed obtained by authority of the owner for seeding purposes shall not constitute an infringement. A purchaser who diverts seed from such channels to seeding purposes shall be deemed to have notice under section 2567 of this title that the actions of the purchaser constitute an infringement.

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7 U.S.C. § 2544

2544. Research exemption

The use and reproduction of a protected variety for plant breeding or other bona fide research shall not constitute an infringement of the protection provided under this chapter.

PL 105-289 (HR 1197)
October 27, 1998
PLANT PATENT AMENDMENTS ACT OF 1998

An Act to amend title 35, United States Code, to protect patent owners against the unauthorized sale of plant parts taken from plants illegally reproduced, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE

This Act may be cited as the "Plant Patent Amendments Act of 1998."

SEC. 2. FINDINGS AND PURPOSES.

* * *

(b) PURPOSES. – The purposes of this Act are –

(1) to clearly and explicitly provide that title 35, United States Code, protects the owner of a plant patent against the unauthorized sale of plant parts taken from plants illegally reproduced.

(2) to make the protections provided under such title more consistent with those provided breeders of sexually reproduced plants under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), as amended by the Plant Variety Protection Act Amendments of 1994 (Public Law 103-349); and

* * *

SEC. 3. AMENDMENT TO TITLE 35, UNITED STATES CODE.

(a) RIGHTS IN PLANT PATENTS. – Section 163 of title 35, United States Code, is amended to read as follows:

"§ 163. Grant

"In the case of a plant patent, the grant shall include the right to exclude others from asexually reproducing the plant, and from using, offering for sale, or selling the plant so reproduced, or any of its parts, throughout the United States, or from importing the plant so reproduced, or any parts thereof, into the United States."

Supreme Court, U.S.
FILED
JUL 12 2000
CLERK

(2)

No. 99-1996

IN THE

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.) FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF IN OPPOSITION

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QUESTION PRESENTED

Whether utility patents relating to plants developed by human intervention are proper statutory subject matter under 35 U.S.C. § 101?

STATEMENT PURSUANT TO RULE 29.6

Respondent, Pioneer Hi-Bred International Inc., is a wholly owned subsidiary of E.I. du Pont de Nemours and Company.

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STATEMENT OF THE CASE

On February 20, 1998, Respondent Pioneer Hi-Bred International, Inc. ("Pioneer") brought a patent infringement suit against Petitioners (collectively "Farm Advantage") for infringement of seventeen utility patents. Each of the utility patents allegedly infringed have claims directed to corn hybrids developed by Pioneer that were sexually produced. The patented plant inventions are embodied in various corn hybrids sold throughout the United States by Pioneer.

Farm Advantage is a reseller (purchase and then sell to customers) of many products. Pioneer alleges that Farm Advantage resold Pioneer-brand seed corn in violation of a limited label license contained on each bag of seed. Farm Advantage filed a motion for summary judgment on March 30, 1998 seeking to invalidate all of the claims of all of the patents-in-suit on the sole basis that the inventions did not fall within the classes of permissible statutory subject matter protected by 35 U.S.C. § 101.

The trial court, after oral argument from the parties and consideration of all the evidence, denied Farm Advantage's Motion for Summary Judgment. The pertinent portion of that ruling reads as follows:

> [T]his Court is persuaded that it must find that the Plant Variety Protection Act is not the sole and exclusive method of protecting seed corn. It boils down to the fact that it is Congress' job to answer this question. At no place in any of the statutes does it say that seed corn plants cannot be given a patent. At no place in the statutes does it say that you cannot have both patent and PVPA

> protection. At no place in the law does it say that you have to make an election of one or the other, section 101 or the P.V.P.A.

(App. 39).

Senior Judge Donald E. O'Brien, in drafting his order, carefully reviewed the legislative histories, as well as the case law surrounding the interpretation of 35 U.S.C. § 101, including *Diamond v. Chakrabarty*, 447 U.S. 303, 100 S. Ct. 2204, 65 L. Ed. 2d 144 (1980). The district court stated:

> This Court finds no explicit support in the legislative history for the premise, advanced by the defendants', or an intent to restrict or limit the scope of patentable subject matter available pursuant to 35 U.S.C. § 101. Congress's intention in adopting the PPA and PVPA was to extend patent protection to an area not often able to meet the requirements of 35 U.S.C. § 112, given the then limits of plant science. History demonstrates, however, that in those instances where inventors showed they could define a reproducible plant meeting the limits of § 112, plant patents were issued under § 101. An early example of this is the Boehm patent, U.S. Patent 2,048,056 (1936) (Plaintiff's Exhibit D). Today, the requirements of § 112 can be met through a written description combined with a deposit of the invention as required for some microorganisms. Manual of Patent Examining Procedure § 2403.02 (6th ed. 1997). In passing the PVPA and PPA, Congress maintained the broad language of § 101 in order to recognize, reward, and encourage

> developments in plant breeding that were capable of someday meeting the enablement requirements. *See Chakrabarty*, 447 U.S. at 312-315.

(App. 29-30). In ruling on this matter, the district court reaffirmed the broad interpretation that has been accorded section 101 by the Supreme Court.

Due to the fact that continued vitality of the Patent Act depends greatly on the expansive scope of section 101 and its ability to encompass those innovations which cannot now be anticipated, this broad interpretation consistent with prior Supreme Court precedent was affirmed by the Federal Circuit. As noted by the Federal Circuit:

> In *Chakrabarty*, the [Supreme] Court dealt directly with this provision, responding to the arguments concerning the patentability of Dr. Chakrabarty's new bacterium that was engineered to consume oil spills. The [Supreme] Court explained that the patent system is directed to the inventive works of mankind, and is not otherwise limited: "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308, 100 S.Ct. 2204, 65 L.Ed.2d 144, 206 U.S.P.Q. at 197.

Pioneer Hi-Bred International, Inc. v. J.E.M. Ag Supply, Inc., 200 F.3d 1374, 1376 (Fed. Cir. 2000). The Circuit Court concluded:

> The Court in *Chakrabarty* responded to the objection to patenting living things by stating that

"Congress is free to amend § 101 so as to exclude from patent protection organisms produced by genetic engineering. . . . Or it may choose to craft a statute specifically designed for such living things." 447 U.S. at 318, 100 S.Ct. 2204, 65 L.Ed.2d 144, 206 U.S.P.Q. at 201. The defendants argue that this is what Congress did in the PVPA. However, the PVPA does not purport to remove plants from the patent statute. Neither Congress nor the courts excluded new plant varieties from the patent statute; the enactment of the PVPA did not effect such an exclusion.

The defendants also object that Pioneer has obtained patents under Title 35 as well as certificates under the PVPA, and state that these statutes are in conflict. The district court observed, correctly, that the asserted conflict is simply the difference in the rights and obligations imposed by the two statutes. It is not unusual for more than one statute to apply to a legal or property interest. For example, an ornamental design may qualify for protection under both copyright and design patent law. The fact that laws are of different scope does not invalidate the laws.

Pioneer Hi-Bred, 200 F.3d at 1378. Because these issues have already been decided by this Court in *Chakrabarty*, Petitioners' request for a writ for certiorari should be denied.

REASONS FOR DENYING THE WRIT

This Court's decision in *Diamond v. Chakrabarty*, 447 U.S. 303, 100 S. Ct. 2204, 65 L. Ed. 2d 144 (1980), ("Chakrabarty") directly addresses the question in this case. The arguments made by Petitioners are nothing more than arguments already rejected by the District Court and the Federal Circuit Court of Appeals in light of this well-established precedent. The Federal Circuit, created to eliminate inconsistencies in patent matters and thereby eliminating any possibility of intercircuit conflict, correctly applied *Chakrabarty* and concluded that there was no exclusion for living matter, which include plants, expressly or impliedly found in 35 U.S.C. § 101. Therefore, Petitioners' request for a writ of certiorari should be denied as not being in conflict with any Supreme Court decision.

I.

THE FEDERAL CIRCUIT DECISION IS CONSISTENT WITH THE SUPREME COURT'S LONG-STANDING DECISION OF *DIAMOND v. CHAKRABARTY*

The issue in this appeal, as was in this Court's decision in *Chakrabarty*, is one of statutory construction of the categories of patentable subject matter included within 35 U.S.C. § 101. Specifically, both the District Court and the Federal Circuit held consistent with *Chakrabarty* that inventions relating to plants are capable of utility patent protection.[1] While such matter might also qualify for

1. Although sometimes used interchangeably by Petitioners, utility patents (including utility patents on plants) are those protected under 35 U.S.C. § 101, while plant patents are governed by 35 U.S.C. § 161, *et seq.* There is no requirement in these statutes that only one form of protection must be elected or is available.

protection under the Plant Variety Protection Act, there is no support for the argument that such protection is mutually exclusive.

A. This Court in *Chakrabarty* Established That Living Matter Falls Within the Protection of 35 U.S.C. § 101

Section 101 provides:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

As this Court already recognized in *Diamond v. Chakrabarty*: "In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Diamond v. Chakrabarty*, 447 U.S. at 308, 100 S. Ct. at 2207. Petitioners, however, seek to narrowly construe *Chakrabarty* as a case limited to the factual determination of bacteria only as patentable subject matter. Petitioners opine that although bacteria is included in 35 U.S.C. § 101, plants cannot be protected because of the passage of the Plant Patent Act ("PPA") of 1930 and the Plant Variety Protection Act ("PVPA") of 1970. This argument is made in spite of the clear and broad language in *Chakrabarty* that "living things" (which of course includes plants) are potentially patentable subject matter under section 101. The Supreme Court's decision was based on analysis of the same legislative history now relied on by Petitioners, and the same arguments were then soundly rejected and should be now.

Similar to Petitioners' position here, the government urged in *Chakrabarty* that section 101 of Title 35 did not include coverage for living things, arguing that if that section did protect living organisms, then those subsequent acts (the 1930 PPA and the 1970 PVPA) concerning living plant material would have not been necessary.

This Court rejected those arguments, and found that the passage of the 1930 PPA and 1970 PVPA did not support the position that section 101 did not include living things. The Court in *Chakrabarty* understood extremely well what necessitated the passage of both the 1930 Plant Patent Act and the 1970 Plant Variety Protection Act. As noted in the opinion delivered by Chief Justice Burger:

> Prior to 1930, two factors were thought to remove plants from patent protection. The first was the belief that plants, even those artificially bred, were products of nature for purposes of the Patent Law. . . . The second obstacle to patent protection for plants was the fact that plants were thought not amendable to the "written description" requirement of the Patent Law. . . . In enacting the Plant Patent Act, Congress addressed both of these concerns. . . . Nor does the passage of the 1970 Plant Variety Protection Act support the government's position. As the government acknowledges, sexually reproduced plants were not included under the 1930 Act because new varieties could not be reproduced true-to-type through seedlings. . . . By 1970, however, it was generally recognized that true-to-type reproduction was possible and that plant patent protection was therefore appropriate. The 1970

> Act extended that protection. There is nothing in its language or history to suggest that it was enacted because § 101 did not include living things.

Id., 447 U.S. at 311-313, 100 S. Ct. at 2209-2210.

In spite of the clear language stating that the PPA and PVPA were passed due to scientific, and not legislative, constraints on the Patent Act, Petitioners are attempting to make the same arguments decided adversely to its position in *Chakrabarty*. However, instead of arguing that section 101 excludes living things in their entirety, Petitioners argue that those plant-related acts resulted in the exclusion of plants themselves from section 101, and that such acts would not have been necessary if plants were included in the general subject matter of section 101. Again, this position is contrary to the prior decision in *Chakrabarty*, as the lower Courts correctly found.

B. Petitioners' Use of Legislative History Comments During the Passage of Other Acts is Improper and Unavailing

In *Chakrabarty*, this Court was critical of the use of statutory history of a later Congress to construe the scope of patentable subject matter enacted by an earlier legislative action. *Chakrabarty*, 447 U.S. at 312-13, 100 S. Ct. at 2209. Petitioners are guilty of similar attempts in this case. Instead of construing section 101 based on its' own statutory history, Petitioners resort to the statutory history of two unrelated acts, the Plant Patent Act (1930) and the Plant Variety Protection Act (1970).

As noted previously by the Federal Circuit, citing to this Court: "Simply because a later enacted statute affects in some way an earlier enacted statute is a poor reason to ask [a court] . . . to re-write the earlier statute. Repeals by implication are not favored." *Roche Products, Inc. v. Bolar Pharmaceutical Co.*, 733 F.2d 858, 864 (Fed. Cir. 1984). Thus, "courts are not at liberty to pick and choose among congressional enactments, and when two statutes are capable of coexistence, it is the duty of courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective." *Morton v. Mancari*, 417 U.S. 535, 551, 94 S. Ct. 2474, 2483, 41 L. Ed. 2d 290 (1974).

The Patent Act, Plant Patent Act and Plant Variety Protection Act not only coexist, but have coexisted for the past 30 years. Surely Congress knows this and could have enacted an express exclusion if it wished. As noted by the District Court, the Patent Statutes in the Plant Variety Protection Act have been amended at least 18 times since 1980 and Congress has not grafted any specific limitation limiting the interpretation of section 101 in light of *Chakrabarty*. Since *In re Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985), the Patent Office has been allowing plant-related utility patents subject to the stringent patentability requirements demanded of all 35 U.S.C. § 101 inventions. In fact, as also noted by the District Court, if this practice was contrary to the views of Congress, they have had ample time since the *Hibberd* decision in 1985 to correct this practice, and have not done so.

Although they argue that the Plant Patent Act and Plant Variety Protection Act evidence the intent of Congress to exclude plants from the subject matter of section 101, Petitioners ignore the fact that neither of these acts protects

plants per se. Both of these acts protect distinct and separate categories into which the vast majority of plants do not fall. The Plant Patent Act protects only those discoveries relating to a asexually reproduced plants. 35 U.S.C. § 161. The Plant Variety Protection Act protects only novel varieties of sexually reproduced plants. 7 U.S.C. § 2402(a). If Congress had intended to carve out plants from section 101, it most certainly would not have limited this later enacted method of protection to only those two limited categories of plant material!

The statutory history of section 101 is clear. The broad language at issue here, "manufacture" and "composition of matter", is essentially unchanged from the original patent act. Congress, recognizing a gap, not in protection but in application (35 U.S.C. § 112), drafted the 1930 Plant Patent Act. That Act did not exclude anything from section 101, but instead created an entirely new form of protection which was set forth in section 161 of Title 35 for asexually produced plants. Again, section 101 remained substantially unchanged. As stated by the Supreme Court above, the passage of the 1970 Plant Variety Protection merely provided an extension of the protection concept of the 1930 Plant Patent Act to certain other types of plants. Section 101, remaining substantially unchanged to this day, continues to protect "anything under the sun that is made by man." See most recently *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093, 119 S. Ct. 851, 142 L. Ed. 2d 704 (1999).

C. The Supreme Court Has Consistently Held That Two or More Legal Protections Can Be Available

In *Chakrabarty*, this Court interpreted the scope of 35 U.S.C. § 101 as including coverage for living things, such as microorganisms. Petitioners attempt to read into the *Chakrabarty* decision an exclusion for plants. No such exclusion can be supported. *Chakrabarty* stands for the proposition that anything under the sun that is made by man, including living organisms, can be covered under the provisions of section 101.

Petitioners have shown only that the scope of protection available under section 101 is different than the scope of protection under the Plant Patent Act or the Plant Variety Protection Act. These acts do not protect the same matter in similar ways. There is ample precedent, including decisions from the Supreme Court, that the availability of one form of statutory protection does not in and of itself preclude the availability of protection under another form. *See, e.g., Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 485-87, 94 S. Ct. 1879, 1888-89 (1974) (holding that trade secret and patent protection can peacefully coexist); *Mazer v. Stein*, 347 U.S. 201, 217, 74 S. Ct. 460, 470 (1954) (holding that patentability of a manufactured article does not bar copyright as a work of art). Both the district court and the Federal Court correctly cited this well-established law in reaching their legal conclusions.

Petitioners cite the case of *Kepner v. United States*, 195 U.S. 100, 125 (1904) for the proposition that the lower Courts' position somehow contravenes the legislative interpretation premise that a specific statute must overrule a more general statute. However, the Plant Patent Act is no

more specific or generalized than the Patent Act as codified in section 101. Neither section 161 of the Plant Patent Act, nor the specific provisions of the Plant Variety Protection Act, overrule or are incompatible with the provisions of the Utility Patent Statutes codified at 35 U.S.C. § 101. These Acts are simply differing types of statutory protection. Just as the design patent statutes (35 U.S.C. § 171) do not preempt the utility patent statutes, neither do the Plant Patent Act or the P.V.P.A. preempt 35 U.S.C. § 101.

Lastly, petitions cite the recent FDA tobacco case in support of its application for a writ. Not only does the *Brown & Williamson* case not address the situation of multiple statutory protection schemes found throughout intellectual property law, it is completely inapplicable to the present issue because of the express intent of section 101 to cover "anything made under the sun by man."

CONCLUSION

For the foregoing reasons, Petitioners' request for certiorari should be denied. Both the district court and the Federal Circuit correctly applied the *Chakrabarty* decision which holds that "anything made under the sun by man is patentable subject matter." *Chakrabarty*, 447 U.S. at 309, 100 S. Ct. at 2207-08.

As discussed in *Chakrabarty*, the application of the patent statute (35 U.S.C. § 101) is intended to be broad. Very rare is the occurrence where Congress has restricted the application of section 101. When Congress has taken such drastic action, it has done so expressly and with good reason. *See* 42 U.S.C. § 2181 (excludes atomic weapons inventions).

The decision from which certiorari is sought represents routine application of settled law, and meets none of the established criteria for being worthy of a Writ of Certiorari.

Respectfully submitted,

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Respondent.

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STATEMENT PURSUANT TO RULE 29.6

None of the corporate petitioners has a parent company and no publicly held company owns 10% or more of the stock of any such petitioner.

Pioneer's Brief in Opposition at page 12 states: "... *Brown & Williamson* [529 U.S. __, 120 S. Ct. 1297 (2000)] ... is completely inapplicable to the present issue because of the express intent of § 101 to cover 'anything made under the sun by man.' " First, *Brown & Williamson* is directly on point because it examined the actual text of the statutes in question and applies the rule that a subsequent, more specific statute controls over a general statute that might otherwise cover the subject matter in question. Second, and more important, the "express intent of § 101" was set out in the actual text of the statute when Congress passed the 1952 Patent Act and moved "plants" to §§ 161-164 of Title 35. The phrase Pioneer bases its entire position upon, "anything made under the sun by man", is drawn from legislative history, not statutory text. Further, it is not even an accurate quote from the legislative history, and is given a meaning by Pioneer not intended by its author because Pioneer is using the phrase out of context. The correct statement in the legislative history is: "A person may have 'invented' a machine or manufacture which may include anything under the sun that is made by man ..." Sen. Rep. No. 82-1979, p. 5. The very next page of that report explains that the "plant patents" provisions have been omitted from § 101 and moved to Chapter 15. The 1952 Congress did not intend "anything under the sun that is made by man" to include "plants". The 1952 Congress intended that "plant patents" would be issued only under the provisions of Chapter 15 of Title 35, which restricted those patents to the right to exclude others from *asexually* reproducing the patented plant.

Pioneer at page 10 of its Brief in Opposition incorrectly recounts the statutory history of the 1930 Plant Patent Act and the 1952 Patent Act. Pioneer states at page 10:

> Congress, recognizing a gap, not in protection but in application (35 U.S.C. § 112), drafted the 1930

> Plant Patent Act. That act did not exclude anything from § 101, but instead created an entirely new form of protection which was set forth in section 161 of Title 35 for asexually reproduced plants. Again, § 101 remained substantially unchanged.

The above passage demonstrates a total misunderstanding of the successive statutes enacted by Congress. The 1930 Plant Patent Act (Revised Statutes, §§ 4884, 4886 and 4888) was an amendment to the statutory provisions that were the precursor of 35 U.S.C. § 101. It wasn't until the 1952 Patent Act that Congress drew 35 U.S.C. § 101 as it now substantially reads. The 1952 Congress deliberately chose not to include plant patents in § 101 and instead separated the plant patent provisions from the other provisions defining patentable subject matter. The 1952 Congress placed the plant patent provisions in Chapter 15 and placed the utility patent provisions in 35 U.S.C. § 101.

Pioneer states at pages 9-10 of its Brief in Opposition that the federal statutory protection provided by the Plant Variety Protection Act and the Plant Patent Act cover only "distinct and separate categories into which the vast majority of plants do not fall." This assertion is not true. Asexual reproduction of a plant occurs when the plant is reproduced in a manner other than by seed, and produces a genetic clone of the single parent plant. A plant that is reproduced by sexual reproduction (by seed) produces offspring with a genetic pattern different than that of the two parents — a range of genetic combinations. *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567-1568 (Fed. Cir. 1995), *cert. denied*, 518 U.S. 1018 (1996). The term "variety" in 35 U.S.C. § 161 (PPA) means a single plant. The PPA does

not grant protection to a range of plants, as the PVPA does. *Id.*, 69 F.3d at 1567. "Plants true-to-type, although different in a strict genetic sense, are protectable under the PVPA." *Id.* at 1567, n.7 (citing *Chakarbarty*). The commercial value of plants, or PVPA plant varieties, depends upon the ability to reproduce them, asexually or sexually, depending upon which is most suitable for the particular type of plant or plant variety. The PPA and the PVPA grant the right to exclude others from carrying on these essential commercial activities and thus cover the field of federal statutory protection for plants and plant varieties intended by Congress. The very seed purchased by Petitioners that is the basis of Pioneer's patent infringement action was produced in commercial quantities by sexual reproduction.

At page 2 of its Brief in Opposition, Pioneer quotes this statement from the district court's ruling upholding Pioneer's motion for summary judgment:

> History demonstrates, however, that in those instances where inventors showed they could define a reproducible plant meeting the limits of § 112, plant patents were issued under § 101. An early example of this is the Boehm patent, U.S. Patent 2,048,056 (1936) (Plaintiff's Exhibit D).

First, 35 U.S.C. § 101 had not yet been enacted when the Boehm patent was issued in 1936. The Boehm patent was issued under Revised Statutes, §§ 4884, 4886 and 4888, which included the 1930 Plant Patent Act. Second, the Boehm patent claims a method of plant grafting and "[t]he plant which is the product of the method of claim 1 . . ." Boehm patent, U.S. Patent 2,048,056 (1936) p.3. The patent did not claim a plant variety developed by sexual

reproduction, like the Pioneer corn plant varieties that are the subject of this case.

At page 5 of its Brief in Opposition, Pioneer argues that the Court in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), "directly addresses the question in this case." *Chakrabarty* in fact distinguished the question in this case from the Court's holding. The Court did so when it said one way Congress could signal its intent to exclude a particular type of living thing from the coverage of § 101 was "to craft a statute specifically designed for such living things." 447 U.S. at 318. This instruction by the Court clearly appears to be in recognition of Judge Rich's statement in *Application of Bergy and Application of Chakrabarty*, 596 F.2d 952, 987, n.25 (U.S. Ct. Cust. & Pat. App. 1979), *aff'd*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), that "Congress did not intend the term 'manufacture' in § 101 to include plants, which were specifically provided for elsewhere."

Pioneer states at page 11 of its Brief in Opposition that *Mazer v. Stein*, 347 U.S. 201, 217 (1954), held "that patentability of a manufactured article does not bar copyright as a work of art . . ." (The statuettes/lamp stands were not patented.) The Court in *Mazer*, however, based its conclusion on its view that a copyright and a patent do not protect the same attribute of an item. *Id.* Further, the Copyright Act itself provides that the design of a useful article can obtain protection under the Act only if the design features "can be identified separately from and are capable of existing independently of, the utilitarian aspects of the article." 17 U.S.C. § 101.

CONCLUSION

The petition for writ of certiorari should be granted.

Respectfully submitted,

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(4)

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No. 99-1996

In the Supreme Court of the United States

J.E.M. AG SUPPLY, INC., DBA FARM ADVANTAGE, INC., ET AL., PETITIONERS

v.

PIONEER HI-BRED INTERNATIONAL, INC.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

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QUESTION PRESENTED

Whether sexually reproduced plants are patentable subject matter under 35 U.S.C. 101.

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This brief is submitted in response to the Court's order inviting the Solicitor General to express the views of the United States.

STATEMENT

1. Three different statutory schemes are relevant to this case. First, 35 U.S.C. 101 provides in pertinent part that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35]." In *Ex parte Hibberd*, 227 U.S.P.Q. (BNA) 443 (Bd. Pat. App. & Interf. 1985),

the Board of Appeals and Interferences of the Patent and Trademark Office (PTO) held that sexually reproduced plants (*i.e.*, plants reproduced from seeds) are eligible for patent protection under Section 101. *Id.* at 443-447. During the 15 years since that decision, the PTO has issued hundreds of so-called "utility patents" protecting sexually reproduced plants.

Under the Plant Patent Act of 1930 (PPA), ch. 312, 46 Stat. 376 (35 U.S.C. 161-164 (1994 & Supp. IV 1998)), the PTO may grant plant patents covering new and distinct varieties of asexually reproduced plants. Asexually reproduced plants are plants that are reproduced from a single parent, such as by grafting, budding, cutting, rooting, or layering. Section 161 of Title 35 provides:

> Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. 161. Section 161 further provides that, except as otherwise provided, "[t]he provisions of [Title 35] relating to patents for inventions shall apply to patents for plants." 35 U.S.C. 161. The PTO has granted more than 10,000 plant patents under Section 161.

Finally, the Plant Variety Protection Act (PVPA), Pub. L. No. 91-577, § 42, 84 Stat. 1547, provides statutory protection to novel varieties of sexually reproduced plants that meet statutory criteria of distinctness, uniformity, and stability. 7 U.S.C. 2402(a) (1994 & Supp. IV 1998). In providing protection for sexually reproduced plants under the PVPA, Congress

established a regime, separate from the patent laws, under which the Department of Agriculture issues plant variety certificates to breeders of novel varieties of sexually reproduced plants. See 7 U.S.C. 2483 (1994 & Supp. IV 1998) ("Contents and term of plant variety protection").

2. Respondent is the world's largest producer of seed corn, and holds utility patents granted, under Section 101 of Title 35, for sexually produced corn hybrids. Respondent filed suit against petitioners, alleging that they infringed respondent's patents covering 17 corn seed products by making, using, and selling or offering for sale seed corn of these patented hybrids. Petitioners are not authorized sales representatives of respondent. Pet. App. 14-15.

Petitioners asserted, among other defenses, the defense of patent invalidity. Petitioners also asserted a counterclaim seeking a declaratory judgment that all of the patents relied upon in respondent's complaint are invalid. Petitioners moved for summary judgment on their counterclaim, arguing that patents directed to sexually reproduced plants are not authorized under Section 101, and that Congress intended the PPA and PVPA to be the exclusive means of securing protection for plants. Pet. App. 15-16.

The district court denied petitioners' motion for summary judgment and held that Section 101 authorizes the issuance of patents covering sexually reproduced plants. Pet. App. 13-39. Relying upon this Court's decision in *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980), the district court concluded that the text of Section 101 authorizes the grant of patents covering plants, Pet. App. 22, and that Congress's intention in adopting the PPA and PVPA was not to limit Section 101, but rather "to extend patent protection to an area [histori-

cally] not often able to meet the requirements" for protection under Section 101, *id.* at 29.

3. On interlocutory appeal under 28 U.S.C. 1292(b), the court of appeals affirmed. Starting from the premise that "Congress plainly contemplated that [Section 101] would be given wide scope," Pet. App. 4 (quoting *Chakrabarty*, 447 U.S. at 308), the court of appeals found that nothing in the text of Section 101, the PPA, or the PVPA narrows that scope by excluding plants from eligibility for protection, *id.* at 6-8. Nor did the court of appeals find any conflict between patent protection for sexually reproduced plants under Section 101 and certification of such plants under the PVPA. The court determined "that the asserted conflict [between the statutes] is simply the difference in the rights and obligations imposed," not any difficulty in applying the two statutes simultaneously. *Id.* at 8-9.[1]

DISCUSSION

The decision of the court of appeals is correct, and is not in conflict with any decision of this Court or any other court of appeals. Further review by this Court is not warranted.

1. This Court held in *Chakrabarty*, *supra*, that Congress's grant of patent authority in Section 101 should be broadly construed. Section 101 provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter * * * may obtain a patent therefor." 35 U.S.C. 101. The Court has defined "manufacture" "to mean 'the production of articles for use from raw or prepared

[1] The court of appeals declined to address other claims regarding the validity of respondent's particular plant patents, which the district court had not considered and petitioners do not advance before this Court. Pet. App. 9.

materials by giving to these materials new forms, qualities, properties, or combinations.'" *Chakrabarty*, 447 U.S. at 308 (quoting *American Fruit Growers, Inc.* v. *Brogdex Co.*, 283 U.S. 1, 11 (1931)). The phrase "composition of matter" reaches "all compositions of two or more substances and . . . all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." *Ibid.* (internal quotation marks omitted). "In choosing such expansive terms, * * * modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." *Ibid.*

The *Chakrabarty* Court also reviewed the legislative history of Section 101, 447 U.S. at 308-309, and concluded that it confirms Congress's understanding that the patentable subject matter reached by Section 101 "include[s] anything under the sun that is made by man," *id.* at 309 (quoting S. Rep. No. 1979, 82d Cong., 2d Sess. 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. 6 (1952)), provided the other requirements for patentability are satisfied.

In light of the text of Section 101 and its history, the Court held in *Chakrabarty* that a nonnatural, genetically engineered bacterium capable of breaking down multiple components of crude oil "plainly" was within the subject matter of patent under Section 101, being either a "manufacture" or "a composition of matter." 447 U.S. at 305, 309-310. The same reasoning applies to plants, such as the patented corn hybrids at issue in this case. Where a plant has "markedly different characteristics from any found in nature" (which is not in dispute for purposes of this petition) and "ha[s] the potential for significant utility" (also not at issue here), the plant "is patentable subject matter under § 101."

Id. at 310; see also *id.* at 311 (rejecting argument that the terms "manufacture" and "composition of matter" do not include living things). Accordingly, novel plants made by human intervention, as well as seeds and tissue cultures from those plants, are eligible for patent protection, subject to the conditions and requirements of Title 35.

2. Petitioners base their attempt to overcome *Chakrabarty* upon Congress's extension of specific protection to plants through the PPA and PVPA. See Pet. 7-30. Petitioners argue that Congress has chosen to limit patent and patent-like protection for plants, unlike bacteria and other living things, to the specific protections provided under the PPA and PVPA. Once again, however, the contrary holding of this Court in *Chakrabarty* is controlling.

As petitioner in *Chakrabarty*, the United States similarly argued that the adoption of specific protections for plants in the PPA and PVPA, and the surrounding legislative history, demonstrated Congress's understanding that Title 35 would not otherwise afford patent protection to plants, and that the PPA and PVPA would be the exclusive means of securing patent or patent-like protection for plants. Brief for Pet. at 21-37 (No. 79-136). This Court rejected the government's submission, and we see no reason to revisit the issue in this case.

In reaching the conclusion that the PPA and PVPA do not impliedly establish an exclusion from the scope of patentable subject matter under Section 101, this Court reviewed the history of both statutes. The Court explained that, when Congress enacted the PPA in 1930, it sought to address two restrictions in the patent laws that were then thought to preclude protection for asexually reproduced plants as a practical matter. The

first restriction was the belief, in some quarters, that plants were products of nature rather than of man for purposes of patent law, and remained so even if artificially bred. *Chakrabarty*, 447 U.S. at 311-312. The second restriction was the requirement that the subject of the patent be described in writing in sufficient detail to allow reproduction of the invention, a requirement that it was thought impossible to satisfy in the case of plants. *Id.* at 312; see 35 U.S.C. 33 (1925) ("inventor * * * shall file * * * a written description of the [invention]"); 35 U.S.C. 112 (current codification of "written description" requirement). Congress resolved both issues in favor of patentability through the PPA, thereby ensuring that patent protection would be afforded to innovations in plant breeding notwithstanding the difficulties in obtaining protection under Section 101. Accordingly, the Court held in *Chakrabarty* that the legislative history of the PPA does not reveal a congressional understanding that plants necessarily are, or thereafter would be, outside the broad scope of patentable subject matter under Section 101. 447 U.S. at 312-313; see generally *Barr* v. *United States*, 324 U.S. 83, 90 (1945) ("[I]f Congress has made a choice of language which fairly brings a given situation within a statute, it is unimportant that the particular application may not have been contemplated by the legislators.").

The Court similarly held in *Chakrabarty* that the PVPA was enacted to reflect advances in breeding techniques that made it possible to reproduce new varieties of plants, true-to-type, through seeds.[2] Again, the Court concluded that nothing in the language or legislative history of the PVPA reflects a congressional

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[2] In true-to-type reproduction, the plant inherits genetic characteristics identical to those of the parent plant.

view that plants were or would be categorically ineligible for protection under Section 101, in the event that eligibility could be established in accordance with the terms of Section 101 and Title 35. *Chakrabarty*, 447 U.S. at 313.

The dissenting Justices in *Chakrabarty*, like the government in that case and petitioners here, argued that, when it adopted the PPA and PVPA, "Congress thought it had to legislate in order to make agricultural 'human-made inventions' patentable." 447 U.S. at 321. Accordingly, the dissenters concluded that such agricultural inventions are protectable only insofar as they come within the scope of the PPA or PVPA. *Id.* at 318-322 (Brennan, J., dissenting). The dissenters' view, of course, was rejected. Petitioner does not suggest any justification for reopening that decision. This Court, moreover, has consistently recognized that the doctrine of stare decisis has special force in matters of statutory interpretation, which Congress remains free to address through amending legislation. See, *e.g.*, *Hilton* v. *South Carolina Pub. Rys. Comm'n*, 502 U.S. 197, 205 (1991) ("*stare decisis* is most compelling" where "a pure question of statutory construction" is involved).

3. Petitioner argues (Pet. 24-27) that interpreting Section 101 as allowing utility patent protection for sexually reproduced plants that otherwise meet the requirements of Title 35 would create "[i]rreconcilable [c]onflicts" (Pet. 24) with the PVPA, so that Congress should be presumed to have intended that protection under Section 101 would not be available. As both the district court and the court of appeals determined, however, the asserted "conflicts" between Section 101 and the PVPA are merely "difference[s]" in the requirements for obtaining protection, the administrative schemes, and the scope of the protection afforded. Pet.

App. 9, 30-34. While some overlap is possible, petitioners do not establish (Pet. 24-27) that implementation of one scheme precludes implementation of the other.

Nor does implementation of the provisions of Section 101 in the context of sexually reproduced plants nullify the PVPA. Section 101 and the PVPA instead provide distinct and complementary protection. See generally *Watt* v. *Alaska*, 451 U.S. 259, 267 (1981) ("We must read the statutes to give effect to each if we can do so while preserving their sense and purpose."); *United States* v. *Borden Co.*, 308 U.S. 188, 198-199 (1939) ("When there are two acts upon the same subject, the rule is to give effect to both if possible. * * * It is not sufficient * * * to establish that subsequent laws cover some or even all of the cases provided for by [the prior act] * * *. There must be a positive repugnancy between the provisions of the new law, and those of the old.") (citations and internal quotation marks omitted).[3]

For instance, an invention or discovery must be new, useful, and not obvious to receive utility patent protection under Section 101. 35 U.S.C. 101-103 (1994 & Supp. IV 1998). Plant variety protection certificates, however, may be issued with respect to sexually reproduced plant varieties that are new, distinct, uniform, and stable. 7 U.S.C. 2402 (1994 & Supp. IV 1998). Thus, as the name indicates, utility patents under Section 101 require usefulness, whereas the PVPA does not. The characteristics of the plant variety protected under the PVPA also may not meet the requirement of non-obviousness that applies to a utility patent.

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[3] Petitioners' reliance (Pet. 12-14) upon the Court's prioritization of conflicting statutes in *FDA* v. *Brown & Williamson Tobacco Corp.*, 120 S. Ct. 1291, 1301 (2000), is thus misplaced.

To obtain utility patent protection, moreover, the applicant must provide a written description of how to make and use the disclosed invention. 35 U.S.C. 112. That disclosure requirement benefits the public by ensuring that others will be able to make, use, and build upon patented discoveries once the patent expires. (As discussed above, the difficulty plant breeders had in complying with the disclosure requirement led Congress to adopt the PPA's less-rigorous requirement that the applicant's written description must be "as complete as is reasonably possible." 35 U.S.C. 162.) By contrast with the requirements for issuance of a patent under both Section 101 and the PPA, the PVPA requires only a description of the plant, along with a deposit of seed in a public depository. 7 U.S.C. 2422.[4]

Although more difficult to obtain, utility patent protection for sexually reproduced plants and seeds under Section 101 is broader in scope than the protection afforded by a plant variety protection certificate under the PVPA. The protection afforded by a certificate is limited to the particular variety described therein. See 7 U.S.C. 2402(a) (1994 & Supp. IV 1998). A utility patent, by contrast, may be granted to protect discoveries embracing a class or species of plants, and does not have to be limited to a particular plant variety.[5]

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[4] The seed deposit requirement ensures that the statutory criteria of uniformity and stability are satisfied, but, unlike the description requirements of Title 35, does not suffice to place the invention in the public domain after the term of protection expires.

[5] For example, the PTO has issued a utility patent covering rice plants with increased resistance to herbicides. See U.S. Patent No. 5,545,822A (Aug. 13, 1996). The broader coverage available through Section 101 is increasingly important in light of advances in genetic engineering, such as use of recombinant DNA technology to develop utility-patented plants having improved insecticidal properties. See U.S. Patent No. 5,977,442A (Nov. 2, 1999). The breadth of coverage afforded by utility patents may be essential in some circumstances to protect plant inventions produced by genetic engineering.

The PVPA also establishes several exemptions to infringement that do not apply to utility patents. The exclusive rights granted by a certificate of plant variety protection are subject to a prior use clause (7 U.S.C. 2542), a research exemption (7 U.S.C. 2544), and a crop exemption for farmers (7 U.S.C. 2543), all of which may limit the breeder's ability to recover an economic return.

For those applicants who can comply with the stringent requirements for patentability under Section 101, utility patent protection offers more extensive protection than the PVPA. Limiting the scope of Section 101 to exclude sexually reproduced plants—thus denying that broader protection—would be contrary to congressional intent (as interpreted in *Chakrabarty*, *supra*) and would reduce incentives for research and development in the agricultural and horticultural arts.

4. Finally, citing *Ropat Corp.* v. *McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976), petitioners suggest that the court of appeals wrongly approved "[d]ual protection of the same invention." Pet. 26-27. *Ropat* held that dual patents (a design patent and a utility patent) could not be issued on the same aspect of the same invention. 535 F.2d at 381. The court of appeals in that case simply applied the settled rule that, in order to avoid prolonging the period of a patent monopoly beyond that intended by Congress, "two valid patents for the same invention cannot be granted either to the same or to a different party." *Miller* v. *Eagle Mfg. Co.*, 151 U.S. 186, 197 (1894).

Here, the only relevant patents held by respondent are utility patents issued under Section 101, and petitioners' challenge to their validity is based on the argument that respondent should have secured protection under the PVPA instead. See Pet. 3-5. The record thus indicates that respondent holds only one patent for each invention, and the rule against "double patenting" is not implicated.

CONCLUSION

The petition for a writ of certiorari should be denied.

Respectfully submitted.

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Petitioners,

v.

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Respondent.

On Petition For Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

SUPPLEMENTAL BRIEF IN RESPONSE TO SOLICITOR GENERAL'S AMICUS BRIEF

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QUESTION PRESENTED

Are patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, et seq., and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants or plant varieties?

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THE UNITED STATES DOES NOT SET FORTH COGENT REASONS FOR DENIAL OF THE PETITION FOR WRIT OF CERTIORARI.

The Solicitor General misstates the argument of the dissent in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), as well as the holding in *Chakrabarty*. (Solicitor General Brief p. 6-8) The dissent in *Chakrabarty* argued that passage of the Plant Patent Act of 1930 ("PPA"), Ch. 312, 46 Stat. 376 (35 U.S.C. §§ 161-164), and the Plant Variety Protection Act ("PVPA"), Pub. L. No. 91-577, § 42, 84 Stat. 1547 (7 U.S.C. § 2321, et seq.), showed Congress' intent that *no* living things could be patented under 35 U.S.C. § 101. *Chakrabarty*, 447 U.S. at 319-322. The majority in *Chakrabarty* held that the passage of these plant-specific acts did not evidence Congressional intent that § 101 could never cover any form of living thing, such as a bacterium. *Chakrabarty*, 447 U.S. at 311-314. The *Chakrabarty* majority did instruct that once Congress enacted a statute specifically designed to provide federal protection to a particular type of living thing, such specific legislation would evidence Congress' intent that the general language of § 101 did not include that particular type of living thing. *Chakrabarty*, 447 U.S. at 318. Congress did that for the subject of plants when it enacted the 1930 PPA and the 1970 PVPA. The *Chakrabarty* majority also instructed that Congress could amend § 101 to exclude a particular type of living thing. *Id*. Congress also did this in the 1952 Patent Act when it enacted 35 U.S.C. § 101 (July 19, 1952, c. 950, 66 Stat. 797, P.L. 82-593) deliberately excluding "plants" from the section and treating "plants" specifically in 35 U.S.C. §§ 161-164, retaining the limitation that a plant patent conferred only the right to

exclude others from asexually reproducing the patented plant. (See, Senate Report No. 82-1979, 82nd Cong., 2nd Sess. 1952, at 1952 WL 3180 (Leg. Hist.) p. 4, 6, 10 and 15)

The *Chakrabarty* court's instruction on the effect of organism-specific legislation is clearly in recognition of the point made by Judge Rich in *Application of Bergy and Application of Chakrabarty*, 596 F.2d 952, 987, n. 25 (U.S. Ct. Cust. & Pat. App. 1979), *aff'd Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (referring to the statement in the House and Senate Reports accompanying the 1952 Patent Act that "a machine, or a manufacture . . . may include anything under the sun that is made by man . . . "):

> We recognize that, at the time the statement was made, its authors realized that Congress did not intend the term "manufacture" in § 101 to include plants, which were specifically provided for elsewhere. It is with this in mind that we take the quoted statement as an expression of Congressional will that the term "manufacture" otherwise be given the broadest possible interpretation.

The Solicitor General argues that § 101 patents require proof of "usefulness" and "non-obviousness", which the PVPA does not. (Solicitor General Brief p. 9) The Solicitor General's Brief at page 10 continues the argument:

> Although more difficult to obtain,[1] utility patent protection for sexually reproduced plants and

[1] Actually, there is zero evidence in the record that § 101 patents are "more difficult to obtain" than a PVP certificate. The PTO has not even strictly enforced § 112 (written description requirement) against such plant patent applications. *Cf.* 35 U.S.C. § 112 with 35 U.S.C. § 162 (relaxed written description for plant patents subject to the asexual reproduction limitation). Further the Plant Variety Protection Office requires, in exchange for issuance of a Plant Variety Protection Certificate on a corn hybrid, that the identities of the inbred parents that are cross-pollinated to make the hybrid are disclosed, that seed of the inbred parents is deposited, and that the breeding history of each of the inbred parents is disclosed (*See*, 7 U.S.C. § 2422(1) and 7 C.F.R. § 97.6(d)). The PTO in issuing the corn hybrid patents disputed in this case did not require disclosure of any of this information and therefore one skilled in the art of plant breeding would not be able to recreate the patented corn hybrid.

> seed under Section 101 is broader in scope than the protection afforded by a plant variety protection certificate under the PVPA.

Congress in the PPA, 1952 Patent Act, and PVPA, deliberately decided not to include the concepts of "usefulness" and "non-obviousness" as requirements for federal statutory protection of the right to sexually reproduce plants, and deliberately decided that narrower protection would be provided to plants than was afforded under 35 U.S.C. § 101. The Solicitor General at page 11 of his brief complains that the PVPA makes protection subject to a prior use clause (7 U.S.C. § 2542), a research exemption (7 U.S.C. § 2544), and a seed saving exemption for farmers (7 U.S.C. § 2543), "all of which may limit the breeder's ability to recover an economic return." But these essential provisions prevent the breeder from monopolizing all use of a plant variety's genes for 20 years and thus these provisions grant specific federal rights to competing researchers and to farmers. Congress has never repealed these specific federal statutory rights. Neither the PTO nor a court should do so.

The Solicitor General at page 9 of his brief states: "Section 101 and the PVPA instead provide distinct and complimentary protection." (Citing *Watt v. Alaska*, 451 U.S. 259, 267 (1981), and *United States v. Borden Co.*, 308 U.S. 188, 198-199 (1939)) In fact, the two statutes provide *conflicting* protection. *Watt* and *Borden* are inapposite. In *Watt*, pursuant to § 35 of the Mineral Leasing Act of 1920 (30 U.S.C. § 191), no portion of oil and gas lease revenues from land that had been removed from existing public land to create wildlife refuges was paid to the county in which such wildlife refuge land was located. Congress enacted the 1964 amendments to the Wildlife Refuge Revenue Sharing Act (Section 401(c), 49 Stat. 383 as amended, 16 U.S.C. § 715(c)) because of its concern about the ability to *acquire new lands* for wildlife refuges. *Watt* at 451 U.S. 264, 272. The 1964 amendments provided that 10% of oil and gas lease revenues would be paid to the county in which the wildlife refuge land was located. Nothing in the legislative history of the 1964 amendments mentioned the formula provided in § 35 of the Mineral Leasing Act of 1920 under which oil and gas lease revenues from wildlife refuges carved out of existing public land were distributed. The court in *Watt* therefore held that the 1964 amendments to the Wildlife Refuge Revenue Sharing Act were not intended to repeal the long-standing revenue distribution formula contained in § 35 of the Mineral Leasing Act of 1920.

In *United States v. Borden Co.*, 308 U.S. 188, 200-203 (1939), the court held that the Agricultural Marketing Agreement Act of 1937 exempted certain specific types of marketing agreements but that marketing agreements not within the specific class exempted were subject to the

prior, settled interpretation of the Sherman Act that such agreements were anti-trust violations.

In the present case the PPA and PVPA were not enacted in the face of a long-standing, exclusive, and widespread practice of issuing patents on plants under 35 U.S.C. § 101. That practice did not even begin until 15 years after the enactment of the PVPA, when the PTO issued its ruling in *Hibberd, Ex parte*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985). It is that ruling, and the consequent aggressive use of § 101 plant patents beginning in the 1990's, which are challenged in this petition for certiorari. Further, the legislative history of the PPA, 1952 Patent Act, and PVPA shows that at the time each of these statues was enacted Congress did not intend that patents could be issued under § 101 conferring the right to exclude others from sexually reproducing a plant or plant variety.

Watt and *Borden* do not warrant the Solicitor General's casual dismissal of *FDA v. Brown & Williamson Tobacco Corp.*, 120 S.Ct. 1291 (2000). The present case is controlled by the rule applied in *Brown & Williamson, id.*, 1300-01, 1306-07, and acknowledged in *Chakrabarty*, 447 U.S. at 318, and in *Application of Bergy*, 596 F.2d at 987, n. 25. That controlling rule holds specific statutory terms governing the given subject matter will prevail over general language of the same or another statute which might otherwise prove controlling. The PVPA creates a special governing board with farmer and public representation, creates a special agency to make judgments on what plant varieties are entitled to receive federal statutory protection conferring the right to exclude others from sexually reproducing the plant variety, exempts plant researchers

from suits charging infringement, allows farmers to save seed and replant it on their own farms, and excludes from infringement any act that does not involve further propagation of the variety.[2] 7 U.S.C. § 2321, 2323, 2327, 2544, 2543, and 2541(d). Section 101, of 35 U.S.C., the more general statute, cannot be construed to repeal these and the many other plant-specific provisions contained in the PVPA and PPA. Further, the Solicitor General at page 10 of his brief states, "A utility patent, by contrast, may be granted to protect discoveries embracing a class or species of plants, and does not have to be limited to a particular plant variety." If Congress would have intended to expand statutory protection beyond a particular plant (PPA and asexual reproduction) or a particular plant variety (PVPA and sexual reproduction), it would have so stated in 1930, 1952, and 1970 when it enacted its plant-specific legislation.

---

[2] Propagation of a plant variety is multiplying the variety to create new seeds of the variety. An act not involving propagation of a protected variety does not result in creating new seeds of the variety that can be sold or used in competition against the original breeder. *See*, 7 U.S.C. § 2541(d). Petitioners only sold unaltered bags of Pioneer seed to a small number of farmers who planted the corn hybrid seed and sold the harvested field corn at the elevator. The Solicitor General notes at page 3 of his brief that petitioners "are not authorized sales representatives of respondent." The contractual relationship between petitioners and respondent is a state law issue that is irrelevant to the question in this case. Suffice it to say, there has been no finding in this case that respondent was not fully aware of petitioners' intent to sell Pioneer bags of seed or that petitioners have done anything deceitful.

The position pressed by the Solicitor General is based on a scientific misconception, and a consequent gross simplification, of what occurs when plant varieties are sexually reproduced. The Solicitor General at page 7, note 2, of his brief gives this definition of true-to-type sexual reproduction (by seed): "In true-to-type reproduction, the plant inherits genetic characteristics identical to those of the parent plant." In fact this can only be achieved by asexual reproduction, which is not accomplished by growing seed. Asexually reproducing a plant produces offspring with a genetic combination identical to that of the single parent. Thus, a plant produced by asexual reproduction is a genetic clone of the original parent. Sexual reproduction produces offspring with a genetic combination different than that of either of the two parents, resulting in a plant variety consisting of a range of genetic combinations. *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567-1568 (Fed. Cir. 1995), *cert. denied*, 518 U.S. 1018 (1996). The PVPA creates a special agency to apply a specific criteria to determine which sexually reproduced plant varieties should be entitled to federal statutory protection.

The Solicitor General at page 10, note 5, of his brief states: "The breadth of coverage afforded by utility patents may be essential in some circumstances to protect plant inventions produced by genetic engineering." The Solicitor General also states at page 11 that, "Limiting the scope of Section 101 to exclude sexually reproduced plants . . . would reduce incentives for research and development in the agricultural and horticultural arts." Yet Congress has specifically and repeatedly addressed these very issues, in 1930 (PPA), 1952 (comprehensive

revision of Title 35) and 1970 (PVPA, the culmination of the 1968 patent law revision hearings). And on each of these occasions, Congress determined that Title 35 is an inappropriate means to grant federal protection to a breeder who propagates a new plant variety by sexual reproduction (by seed). To the contrary, Congress specifically determined that the germ plasm (a plant variety's DNA) should not be locked out of the research market by the grant of § 101 patent protection to the original breeder. *See* 7 U.S.C. § 2544 (PVPA research exemption). If the executive branch of the government now believes that such a right of exclusion should be granted through a § 101 patent, then it should direct this argument to Congress for the legislative branch's ultimate determination. These issues present facts of an essentially legislative and not judicial character. The assertion will be tested with a backing of the resources of the federal government only if presented to Congress.

Respectfully submitted,

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No. 99-1996

Supreme Court, U.S.
FILED
MAY 4 2001
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In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

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		* * *
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3/13/98	11	ANSWER to [1-1] and COUNTER-CLAIM by defendant JEM Ag Supply Inc. defendant Farm Advantage Inc against plaintiff Pioneer Hi-Bred Intl; answer ddl satisfied. (kims) [Entry date 04/08/98]
3/16/98	13	ANSWER by defendant Merle Pruett and defendant Siouxland Seeds Inc to Complaint [1-1]; Answer ddl satisfied (kims) [Edit date 03/17/98]
3/16/98	14	DEMAND for jury trial by defendant Merle Pruett and defendant Siouxland Seeds Inc (kims) [Edit date 03/17/98]
3/16/98	15	ANSWER by defendant Tom Eischen Seed to Complaint [1-1]; Answer ddl satisfied (kims)
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3/30/98	23	MOTION by defendant Farm Advantage Inc, defendant Larry Benz, defendant Merle Pruett, defendant Kevin Wolfswinkel, defendant Tim Kamstra, defendant Tom Eischen Seed for summary judgment, for expedited hearing assigned to Judge Donald E. O'Brien (kims)
		* * *
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		* * *
11/20/98	116	MOTION by defendant JEM Ag Supply Inc. defendant Farm Advantage Inc. defendant Larry Benz, defendant Merle Pruett, defendant Siouxland Seeds Inc, defendant Kevin Wolfswinkel, defendant Tim Kamstra to stay assigned to Judge Mark W. Bennett (kims)
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		* * *

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF IOWA
WESTERN DIVISION

PIONEER HI-BRED INTERNATIONAL, INC., Plaintiff, v. J.E.M. AG SUPPLY, INC. d/b/a FARM ADVANTAGE, INC.; FARM ADVANTAGE, INC.; LARRY BENZ; MERLE PRUETT d/b/a SIOUXLAND SEEDS, INC.; SIOUXLAND SEEDS, INC.; KEVIN WOLFSWINKEL; TIM KAMSTRA; and TOM EISCHEN SEED & CHEMICALS Defendants.	Civil Action No. C98-4016DEO **COMPLAINT FOR PATENT INFRINGEMENT**

COMPLAINT

Plaintiff, Pioneer Hi-Bred International, Inc. (hereinafter "Pioneer"), for its complaint against Defendants, alleges as follows:

NATURE OF ACTION, JURISDICTION, VENUE

1. This action is based on patent infringement under 35 U.S.C. § 271. This Court has jurisdiction under 28

U.S.C. §§ 1331 and 1338(a) this being an action arising under the patent laws of the United States.

2. Venue is proper in this district under 28 U.S.C. § 1400(b) and *V.E. Holding Corp. v. Johnson Gas Appliance Co.*, 917 F.2d 1575 (Fed. Cir. 1990).

THE PARTIES

3. Plaintiff Pioneer is a corporation organized and existing under the laws of the State of Iowa and has its principal place of business in Des Moines, Iowa.

4. Defendant J.E.M. Ag Supply, Inc. is a corporation organized under the laws of the State of Iowa and is doing business as Farm Advantage, Inc. Defendant J.E.M. Ag Supply, Inc. has a registered office and principal place of business in Clarion, Iowa.

5. Defendant Farm Advantage, Inc. is a corporation organized under the laws of the State of Iowa and is now inactive. Defendant Farm Advantage, Inc. continues to operate and has a principal place of business at Clarion, Iowa.

6. Defendant Larry Benz is an individual who is a citizen of Iowa and a resident of Melvin, Iowa.

7. Defendant Merle Pruett is an individual who is a citizen of Iowa, and resides in Cherokee, Iowa. On information and belief, Defendant Pruett is doing business as Siouxland Seeds, Inc., with the principal place of business in Cherokee, Iowa.

8. Defendant Siouxland Seeds, Inc. is a corporation organized under the laws of the State of Iowa and is now

inactive. Defendant Siouxland Seeds, Inc. continues to do business and has a principal place of business in Cherokee, Iowa.

9. Defendant Kevin Wolfswinkel is an individual who is a citizen of Iowa, and a resident of Sibley, Iowa.

10. Defendant Tim Kamstra is an individual who is a citizen of Iowa, and a resident of Sheldon, Iowa.

11. Defendant Tom Eischen Seed & Chemical Sales is an unincorporated organization doing business in Iowa, and has a principal place of business in Algona, Iowa.

COUNT I: PATENT INFRINGEMENT
35 U.S.C. § 271

12. This action is based on patent infringement and arises under the patent laws of the United States.

13. Pioneer has duly and legally obtained the patents listed below which cover the manufacture, use, sale, and offer for sale of hybrid and inbred corn seed products. A table showing each hybrid, and the patents associated with that specific hybrid, as well as the issue date for each of those patents, is shown:

TABLE OF PATENTS-IN-SUIT

HYBRID	PATENT NO.	ISSUE DATE
3394	Patent 5,491,295	02/13/96
	Patent 5,506,367	04/09/96
	Patent 5,567,861	10/22/96
3489	Patent 5,557,035	09/17/96
	Patent 5,633,427	05/27/97
	Patent 5,444,178	08/22/95
	Patent 5,347,081	09/13/94
3559	Patent 5,453,564	09/26/95
	Patent 5,495,069	02/27/96
	Patent 5,569,822	10/29/96
	Patent 5,534,661	08/09/96
3730	Patent 5,689,036	11/18/97
	Patent 5,545,813	08/13/96
34R06	Patent 5,557,035	09/17/96
	Patent 5,633,427	05/27/97
	Patent 5,444,178	08/22/95
	Patent 5,347,081	09/13/94
35N05	Patent 5,502,272	03/26/96
	Patent 5,463,173	10/31/95
	Patent 5,347,081	09/13/94
34K77	Patent 5,534,661	07/09/96
35R57	Patent 5,689,034	11/18/97
3563	Patent 5,502,272	03/26/96
	Patent 5,463,173	10/31/95
	Patent 5,347,081	09/13/94
3751	Patent 5,082,992	01/21/92

14. Since the issue date of each of the above-referenced patents, Plaintiff Pioneer has been and still is the owner of all right, title, and interest therein, including the right to sue for infringement for all times material hereto.

15. Plaintiff Pioneer sells products under the aforesaid patents under a limited label license which does not allow for resale, but solely for use "to produce grain and/or forage". No other licenses have been granted to these Defendants.

16. Defendants, none of which are authorized Pioneer Sales Representatives, have for a long-time past been and still are infringing one or more of these letters patent by making, using, selling, or offering for sale corn seed of the above-referenced hybrids in infringement of these patents-in-suit, and will continue to do so unless enjoined by this Court.

17. Plaintiff Pioneer has placed the required statutory notice on all bags and containers of hybrid seeds, identified above, which have been manufactured and sold by Plaintiff Pioneer under said letters patent.

PRAYER

WHEREFORE, Plaintiff demands a preliminary and final injunction against continued infringement, an accounting for damages, and an assessment of interest and costs against Defendants as follows:

A. That Defendants, and any officers, directors, agents, servants, employees, successors, assigns, and all those controlled by them, or in active participation with them, be temporarily restrained and preliminarily and

permanently enjoined from further acts of infringement of the patents-in-suit;

B. That Defendants jointly and severally be required to account for and pay over to Plaintiff all actual damages suffered by Plaintiff and all gains, profits and advantages derived by Defendants from their acts of infringement;

C. That the Court award increased damages to fully compensate Plaintiff, and for the willful and wonton nature of Defendants' aforesaid infringing acts, said award to equal at least three times the amount of Plaintiff's actual damages;

D. That Defendants be ordered to pay pre-judgment interest and costs, and further that Defendants be ordered to pay reasonable attorneys' fees to Plaintiff due to the exceptional nature of this case within the meaning of 35 U.S.C. § 285; and

E. That the Court grant Plaintiff such other further legal and equitable relief as the Court deems just.

PIONEER HY-BRED INTERNATIONAL, INC.

By /s/ Edmund J. Sease
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IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF IOWA
WESTERN DIVISION

PIONEER HI-BRED INTERNATIONAL, INC., Plaintiff, v. J.E.M. AG SUPPLY, INC. d/b/a FARM ADVANTAGE, INC.; FARM ADVANTAGE, INC.; LARRY BENZ; MERLE PRUETT d/b/a SIOUXLAND SEEDS, INC.; SIOUXLAND SEEDS, INC.; KEVIN WOLFSWINKEL; TIM KAMSTRA; and TOM EISCHEN SEED & CHEMICALS Defendants.	Civil Action No. C98-4016DEO **ANSWER OF DEFENDANT FARM ADVANTAGE UNLIMITED CORPORATION**

Defendant Farm Advantage Unlimited Corporation states:

1. For answer to the allegations of paragraph 1, of the Complaint, Defendant denies it has infringed any valid patent. The remaining allegations of paragraph 1 are admitted.

2. The allegations of paragraphs 2 and 3 of the Complaint are admitted.

3. The allegations of paragraphs 4 and 5 are denied. Further answering, Plaintiff served the Complaint on Farm Advantage Unlimited Corporation.

4. The allegations of paragraph 6 of the Complaint are admitted.

5. For answer to paragraph 7 of the Complaint, Defendant admits Merle Pruett is an individual who is a citizen of Iowa and resides in Cherokee, Iowa. The remaining allegations of paragraph 7 are denied.

6. The allegations of paragraph 8 are denied.

7. The allegations of paragraphs 6, 9, 10 and 11 are admitted.

DEFENSE I – TO COUNT ONE

8. The allegations of paragraphs 12, 13, 14, 15, 16 and 17 of the Complaint are denied.

DEFENSE II – PATENT INVALIDITY

9. The alleged patents listed in the Table of Patents-In-Suit set out in paragraph 13 of the Complaint purport to confer upon Plaintiff Pioneer the right to exclude others from selling, offering for sale, or reproducing the listed hybrids, and the right to exclude others from using the listed hybrids in producing a hybrid or different variety therefrom.

10. The listed hybrids are corn (maize) plant hybrids and the listed patents cover corn hybrids and corn inbreds that reproduce sexually (from seeds).

11. The listed patents are invalid because corn (maize) plants are not patentable subject matter within the scope of 35 U.S.C. § 101.

DEFENSE III – FALSE MARKING

12. If Pioneer contends its label prohibits propagation or multiplication of seed in any Pioneer bags of hybrid seed sold to Defendants, Pioneer is in violation of 7 U.S.C. § 2568.

DEFENSE IV – FAILURE TO COMPLY WITH REQUIREMENTS FOR PLANT VARIETY PROTECTION

13. Plaintiff Pioneer has failed to file an application for a certificate of Plant Variety Protection that complies with the requirements of 7 U.S.C. § 2422 for any of the hybrids listed in paragraph 13 of the Complaint.

14. No certificate of Plant Variety Protection has been issued to Plaintiff Pioneer pursuant to 7 U.S.C. §§ 2482 and 2483 for any of the hybrids listed in paragraph 13 of the Complaint.

15. Defendants have not committed any acts of infringement defined in 7 U.S.C. § 2541.

DEFENSE V – ACQUIESCENCE

16. Plaintiff's claims are barred by the doctrine of acquiescense or laches.

DEFENSE VI – WAIVER

17. Plaintiff's claims are barred by the doctrine of waiver.

DEFENSE VII – ESTOPPEL

18. Plaintiff's claims are barred by the doctrine of estoppel.

PRAYER ON PLAINTIFF'S CLAIMS

WHEREFORE, Defendant and Farmers Advantage Unlimited Corporation prays that the Court enter judgment:

A. Denying all of Plaintiff's claims;

B. That Defendants, their employees, agents, assigns and purchasers are legally entitled to sell, offer for sale, or reproduce seed contained in Pioneer bags of seed purchased by Defendants, and are legally entitled to use such seed in producing or developing a hybrid or different variety therefrom;

C. Denying a preliminary or permanent injunction;

D. Awarding Defendants reasonable attorney fees due to the exceptional nature of this case within the meaning of 35 U.S.C. § 285; and

E. Taxing costs to Plaintiff.

FIRST COUNTERCLAIM – PATENT INVALIDITY

19. Plaintiffs/Counterclaimant Defendant Pioneer is a corporation organized under the laws of Iowa, having its principal place of business in Des Moines, Iowa.

20. Defendant/Counterclaimant Farm Advantage Unlimited Corporation is a corporation organized under the laws of Iowa, having its principal place of business in Clarion, Iowa.

21. This Counterclaim arises under the patent laws of the United States, 35 U.S.C. § 1, et seq., and under 28 U.S.C. §§ 2201 and 2202. This Court has jurisdiction of the action under 28 U.S.C. § 1338(a) and this Counterclaim is filed pursuant to Federal Rule of Civil Procedure 13.

22. The alleged patents listed in the Table of Patents-In-Suit set out in paragraph 13 of the Complaint purport to confer upon Plaintiff Pioneer the right to exclude others from selling, offering for sale, or reproducing the listed hybrids, and the right to exclude others from using the listed hybrids in producing a hybrid or different variety therefrom. The listed hybrids are corn (maize) plant hybrids and the listed patents cover corn hybrids and corn inbreds. Certain of the listed patents purport to confer upon Plaintiff Pioneer the right to exclude others from selling, offering for sale, or reproducing certain corn inbreds, and the right to exclude others from using such corn inbreds in producing a hybrid or different variety therefrom.

23. The listed patents that claim hybrid corn plant and seeds as the invention, claim the invention relates to

the hybrid seed and the hybrid plant produced from the seed.

24. The patents that claim inbred corn lines as the invention allege that the invention relates to the plants and seeds of the particular inbred corn line and further relates to the hybrid corn seeds and plants produced by crossing the particular inbred line with another corn line or plant.

25. The patents listed in paragraph 13 of the Complaint, which purport to confer plant variety protection rights on Pioneer for certain sexually reproducing plants, are invalid because corn (maize) plants are not patentable subject matter within the scope of 35 U.S.C. § 101.

26. Defendant is entitled to a judgment declaring all of the patents listed in paragraph 13 of the Complaint invalid.

WHEREFORE, Defendant Farm Advantage Unlimited Corporation prays that the Court enter judgment:

A. Declaring all of the patents listed in paragraph 13 of the Complaint invalid;

B. That Defendant, its employees, agents, assigns and purchasers are legally entitled to sell, offer for sale, or reproduce seed contained in Pioneer bags of seed purchased by Defendant, and are legally entitled to use such seed in producing or developing a hybrid or different variety therefrom;

C. Awarding Defendant reasonable attorney fees due to the exceptional nature of this case within the meaning of 35 U.S.C. § 285; and

D. Taxing costs to Plaintiff.

SECOND COUNTERCLAIM – FALSE MARKING

28. This Court has jurisdiction of this Counterclaim under 28 U.S.C. §§ 1331 and 1338(a) and this Counterclaim is filed pursuant to Federal Rule of Civil Procedure 13.

28. In paragraph 15 of the Complaint Pioneer alleges that the bags of seed sold to Defendants contained label marking "which does not allow for resale, but solely for use 'to produce grain and/or forage' ".

29. A certificate of Plant Variety Protection has not been issued to Plaintiff Pioneer pursuant to 7 U.S.C. §§ 2482 and 2483 for any of the listed hybrids Pioneer alleges have been sold in bags displaying these label markings.

30. Pioneer therefore has violated 7 U.S.C. 2568(a)(3) by falsely marking its seed bags.

31. The business of Farm Advantage has been damaged or is likely to be damaged by Pioneer's acts of false marking, or is subjected to competition in connection with which the act of false marking is performed.

WHEREFORE, Defendant/Counterclaimant Farm Advantage Unlimited Corporation prays that the Court enter judgment:

A. Permanently enjoining Pioneer from violating 7 U.S.C. § 2568(a)(3) by falsely marking its seed bags;

B. That Defendant/Counterclaimant, its employees, agents, assigns and purchasers are legally entitled to utilize seed contained in Pioneer bags of seed purchased by Defendant/

Counterclaimant without interference or restriction by Plaintiff/Counterclaim-Defendant Pioneer;

C. Awarding Defendant/Counterclaimant reasonable attorney fees permitted under 7 U.S.C. § 2565 in exceptional cases; and

D. Taxing costs to Plaintiff/Counterclaim-Defendant Pioneer.

/s/ Bruce E. Johnson
Bruce E. Johnson

/s/ S. P. DeVolder
S. P. DeVolder

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CORPORATION

[Proof Of Service Omitted In Printing]

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF IOWA
WESTERN DIVISION

PIONEER HI-BRED INTERNATIONAL, INC.,	)	
Plaintiff,	)	Civil Action No. C98-4016 DEO
v.	)	
J.E.M. AG SUPPLY, INC., d/b/a FARM ADVANTAGE, INC.; FARM ADVANTAGE, INC.; LARRY BENZ; MERLE PRUETT, d/b/a SIOUXLAND SEEDS, INC.; SIOUXLAND SEEDS, INC.; KEVIN WOLFSWINKEL; TIM KAMSTRA; and TOM EISCHEN SEED & CHEMICALS,	)	
Defendants.	)	

AFFIDAVIT OF JEAN BROMERT

I, Jean Bromert, being first duly sworn, do hereby declare and state as follows:

1. I am a corporate patent counsel for Pioneer Hi-Bred International, Inc., located in Johnston, Iowa.

2. I have worked for Pioneer Hi-Bred International, Inc. in various capacities for the last fifteen years, including the past year as corporate counsel and past two months as corporate patent counsel

3. I am familiar with the facts of this case and the motions presented by Farm Advantage.

4. On or about April 9, 1998, a computer database search was conducted by Ken Braun, Librarian for Pioneer Hi-Bred International, Inc.

5. The computer database search sought any utility patent in which the word "plant" appeared in the claims.

6. The database source for utility patents was provided by The Dialog Corporation under the file CLAIMS®/U.S. PATENTS. This database included utility patents available from 1950 forward.

7. The search under the file CLAIMS®/U.S. PATENTS excluded any plant patents issued under the Plant Patent Act and was limited to only utility patents falling under Class 800 and Class 435. Class 800 is titled "Multicellular Living Organisms and Unmodified Parts Thereof." This class includes multicellular organisms, including plants as well as genetically modified seeds. Some examples of traditional or conventional breeding techniques used in plants covered by the class included self-pollination, inbred lines, cross-pollination, hybridization, selection, emasculation, cytoplasmic male sterility, etc. Class 435 is titled "Chemistry: Molecular Biology and Microbiology." This class includes processes for cultivating or culturing seed plants and genetic engineering where change in plant cells are produced by artificially inducing a structure change in a gene.

8. This search produced 1,625 utility patents in which the word "plant" appeared in the claims.

9. The 1,625 utility patents represented at least 514 different assignees.

I hereby declare that the foregoing is true and correct to the best of my knowledge and belief.

4-16-98
Date

/s/ Jean Bromert
Jean Bromert

[Jurat Omitted In Printing]

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF IOWA
WESTERN DIVISION

PIONEER HI-BRED INTERNATIONAL, INC., Plaintiff, v. J.E.M. AG SUPPLY, INC., d/b/a FARM ADVANTAGE, INC.; FARM ADVANTAGE, INC.; LARRY BENZ; MERLE PRUETT, d/b/a SIOUXLAND SEEDS, INC.; SIOUXLAND SEEDS, INC.; KEVIN WOLFSWINKEL; TIM KAMSTRA; and TOM EISCHEN SEED & CHEMICALS Defendants.	)	Civil Action No. C98-4016DEO

AFFIDAVIT OF BRUCE A. HALL

I, Bruce A. Hall, hereby declare and state as follows:

1. I am currently Assistant Secretary of Pioneer Hi-Bred International, Inc. ("Pioneer") and have been employed at Pioneer for approximately 16 years. As part of my job responsibilities at Pioneer, I am familiar with this litigation and have reviewed the papers filed herein, including Defendant's Motion for Summary Judgment and supporting papers.

2. Attached as Exhibit B1 to this affidavit is a true and correct copy of an article appearing in *The Des Moines Register* on Wednesday, February 25, 1998, page 10S, 8S.

In that article, Marvin Redenius, co-owner of Farm Advantage, acknowledged that his company had sold Pioneer seed products and that it was not an authorized dealer.

3. None of the Defendants named in the captioned action are authorized sales representatives, dealers or distributors of Pioneer-brand products.

4. Further, in Defendants' statement of material facts in support of Defendants' Motion for Summary Judgment, Defendants admitted that:

> As just one aspect of its full service Farm Advantage purchased some bags of Pioneer Hi-Bred corn seed to resell to some of its farmer customers.

(Statement of material facts, ¶ 1).

5. Further, in the affidavit of Marvin Redenius submitted in support of Defendants' Motion for Summary Judgment, Mr. Redenius admitted: "Farm Advantage's intention is only to resell to Farm Advantage customers bags of Pioneer seed it has purchased." (Affidavit of Marvin Redenius, ¶ 4).

6. Because the label license attached to each bag of Pioneer-brand seed limits the use of that seed for planting only, and does not provide for resale, any reselling of the seed without a license from Pioneer would be in violation of that label license.

/s/ Bruce A. Hall
Bruce A. Hall

[Jurat Omitted In Printing]

PLAINTIFF'S EXHIBIT B1

THE DES MOINES REGISTER ■ WEDNESDAY, FEBRUARY 25, 1998

PIONEER CLAIMS INFRINGEMENT OF SEED PATENTS

■ It sues, alleging unauthorized sales of its corn hybrids.

By ANNE FITZGERALD

[Illegible]

Pioneer Hi-Bred International Inc. has sued a Clarion supplier of farm chemical and agricultural seed products, alleging that the company made unauthorized sales of Pioneer corn hybrids in violation of federal patent laws.

Filed late last week in the western division of the U.S. District Court for the Northern District of Iowa, which is located in Sioux City, the lawsuit names Farm Advantage Inc. of Clarion as a defendant. It also names as defendants several Farm Advantage sales representatives, including Larry Benz of Melvin; Merle Pruett of Cherokee; Kevin Wolfswinkel of Sibley; Tim Kamstra of Sheldon, and Tom Eischen Seed & Chemical Sales of Algona.

Pioneer is seeking injunctive relief and unspecified damages.

If parties not licensed to represent Pioneer sell its products, the company may not be able to ensure the quality of its seed products or back them up with customer service, said Bruce Hall, who is in charge of trademarks for the Des Moines-based plant genetics giant.

"From what we understand, they are selling our product, but we don't know about the quality of that product," he said.

The corn hybrids at issue are patented products in bags bearing a label that precludes their resale, he said. The lawsuit comes at a time when Pioneer and other major seed companies are seeking to patent their products – increasingly, high-dollar, high-tech agricultural seeds requiring hefty investments for development.

Marvin Redenius, co-owner of Farm Advantage, declined to comment, but acknowledged that his company had sold Pioneer seed products in the past even though it was not authorized to do so.

Several of the other defendants said they knew little about the lawsuit and deferred to Farm Advantage officials.

"This is all kind of interesting," said Pruett, who sells various companies' agricultural seed and farm chemical products through his business, Siouxland Seeds Inc. He said he began selling products, including seed corn, last year for Farm Advantage, but has not sold any Pioneer hybrids.

Benz, a row crop and livestock producer, is in the same boat: "I sell for them, but through my farm network here, I haven't sold a bag" of Pioneer seed.

Anne Fitzgerald can be reached at fitzgeralda@news.dmreg.com or (515) 284-8122.

EDITOR'S NOTE

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Supreme Court, U.S.
FILED
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No. 99-1996

In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

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VOLUME II, PAGES 27 TO 69

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Petition For Certiorari Filed June 12, 2000
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HYBRID	PATENT NO.	ISSUE DATE	PATENTED ITEM
3394	5,491,295	02/13/96	Hybrid Corn Plant and Seed
	5,506,367	04/09/96	Inbred Corn Line PHP38
	5,567,861	10/22/96	Inbred Corn Line PHN46
3489	5,557,035	09/17/96	Hybrid Corn Plant & Seed (3489)
	5,633,427	05/27/97	Inbred Corn Line PHHB
	5,444,178	08/22/95	Inbred Corn Line PHHB4
	5,347,081	09/13/94	Inbred Corn Line PHK56
3559	5,453,564	09/26/95	Inbred Corn Line PHTE4
	5,495,069	02/27/96	Inbred Corn Line PHTE4
	5,569,822	10/29/96	Inbred Corn Line PHTE4
	5,534,661	08/09/96	Inbred Maize Line PHKW3
3730	5,689,036	11/18/97	Hybrid Maize Plant and Seed (3730)
	5,545,813	08/13/96	Inbred Maize Line PHRF5
34R06	5,557,035	09/17/96	Hybrid Corn Plant & Seed (3489)
	5,633,427	05/27/97	Inbred Corn Line PHHB
	5,444,178	08/22/95	Inbred Corn Line PHHB4
	5,347,081	09/13/94	Inbred Corn Line PHK56
35N05	5,502,272	03/26/96	Hybrid Corn Plant and Seed (3563)
	5,463,173	10/31/95	Inbred Corn Line PHR61
	5,347,081	09/13/94	Inbred Corn Line PHK56
34K77	5,534,661	07/09/96	Inbred Maize Line PHKW3
35R57	5,689,034	11/18/97	Inbred Maize Line PH24E
3563	5,502,272	03/26/96	Hybrid Corn Plant and Seed (3563)
	5,463,173	10/31/95	Inbred Corn Line PHR61
	5,347,081	09/13/94	Inbred Corn Line PHK56
3751	5,082,992	01/21/92	Inbred Corn Line PHP02

U.S. Patent No. 5,491,295 (hybrid corn line)

US005491295A

United States Patent [19]

Niebur et al.

[11] Patent Number: 5,491,295

[45] Date of Patent: Feb. 13, 1996

[54] **HYBRID CORN PLANT AND SEED**

[75] Inventors: William S. Niebur, Victor, France; Raymond D. Riley, Humboldt County; Stephen W. Noble, Polk County, both of Iowa

[73] Assignee: Pioneer Hi-Bred International, Inc., Des Moines, Iowa

[21] Appl. No.: 323,273

[22] Filed: Nov. 22, 1994

Related U.S. Application Data

[63] Continuation of Ser. No. 962,443, Oct. 16, 1992, abandoned, which is a continuation of Ser. No. 649,786, Feb. 1, 1991, abandoned.

[51] Int. Cl.[6] A01H 5/00; A01H 4/00; C12M 5/04

[52] U.S. Cl. 800/200; 800/250; 800/DIG. 56; 47/58; 435/240.4; 435/240.49; 435/240.5

[58] Field of Search 800/200, 205, 800/DIG. 56; 47/58.03, 58.05; 435/240.4, 240.49, 240.5

[56] **References Cited**

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Primary Examiner—Gary Benzion

Attorney, Agent, or Firm—Pioneer Hi-Bred International, Inc.

[57] **ABSTRACT**

According to the invention, there is provided a hybrid corn plant, designated as 3394, produced by crossing two Pioneer Hi-Bred International, Inc. proprietary inbred corn lines. This invention thus relates to the hybrid seed 3394, the hybrid plant produced from the seed, and variants, mutants, and trivial modifications of hybrid 3394. This hybrid corn plant is characterized by superior yield for maturity, excellent seedling vigor, very good roots and stalks, and exceptional stay green. It is widely adapted, but performs best in the Central and Eastern Corn Belt.

6 Claims, No Drawings

00053

HYBRID CORN PLANT AND SEED

This application is a continuation of prior application Ser. No. 07/962,443, filed Oct. 16, 1992, now abandoned, which was a continuation of prior application Ser. No. 07/649,786, field Feb. 1, 1991, now abandoned.

FIELD OF THE INVENTION

This invention is in the field of plant breeding, specifically hybrid corn breeding.

BACKGROUND OF THE INVENTION

The goal of plant breeding is to combine in a single variety/hybrid various desirable traits of the parental lines. For field crops, these traits may include resistance to diseases and insects, tolerance to heat and drought, reducing the time to crop maturity, greater yield, and better agronomic quality. With mechanical harvesting of many crops, uniformity of plant characteristics such as germination and stand establishment, growth rate, maturity, and fruit size, is important.

Field crops are bred through techniques that take advantage of the plant's method of pollination. A plant is self-pollinating if pollen from one flower is transferred to the same or another flower of the same plant. A plant is cross-pollinated if the pollen comes from a flower on a different plant.

Plants that have been self-pollinated and selected for type for many generations become homozygous at almost all gene loci and produce a uniform population of true breeding progeny. A cross between two homozygous lines produces a uniform population of hybrid plants that may be heterozygous for many gene loci. A cross of two plants each heterozygous at a number of gene loci will produce a population of hybrid plants that differ genetically and will not be uniform.

Corn plants (Zea mays L.) can be bred by both self-pollination and cross-pollination techniques. Corn has male flowers, located on the tassel, and female flowers, located on the ear, on the same plant. Natural pollination occurs in corn when wind blows pollen from the tassels to the silks that protrude from the tops of the incipient ears.

The development of corn hybrids requires the development of homozygous inbred lines, the crossing of these lines, and the evaluation of the crosses. Pedigree breeding and recurrent selection breeding methods are used to develop inbred lines from populations. Breeding programs combine desirable traits from two or more inbred lines or various broad-based sources into breeding pools from which new inbred lines are developed by selfing and selection of desired phenotypes. The new inbreds are crossed with other inbred lines and the hybrids from these crosses are evaluated to determine which have commercial potential.

Pedigree breeding starts with the crossing of two genotypes, each of which may have one or more desirable characteristics that is lacking in the other or which complement the other. If the two original parents do not provide all of the desired characteristics, other sources can be included in the breeding population. In the pedigree method, superior plants are selfed and selected in successive generations. In the succeeding generations the heterozygous condition gives way to homogeneous lines as a result of self-pollination and selection. Typically in the pedigree method of breeding five

or more generations of selfing and selection is practiced. $F_1 \rightarrow F_2$; $F_2 \rightarrow F_3$; $F_3 \rightarrow F_4$; $F_4 \rightarrow F_5$, etc.

A hybrid corn variety is the cross of two inbred lines, each of which may have one or more desirable characteristics lacked by the other or which complement the other. The hybrid progeny of the first generation is designated F_1. In the development of hybrids only the F_1 hybrid plants are sought. The F_1 hybrid is more vigorous than its inbred parents. This hybrid vigor, or heterosis, can be manifested in many ways, including increased vegetative growth and increased yield.

The development of a hybrid corn variety involves three steps: (1) the selection of superior plants from various germplasm pools; (2) the selfing of the superior plants for several generations to produce a series of inbred lines, which although different from each other, each breed true and are highly uniform; and (3) crossing the selected inbred lines with unrelated inbred lines to produce the hybrid progeny (F_1). During the inbreeding process the vigor of the lines decreases. Vigor is restored when two unrelated inbred lines are crossed to produce the hybrid progeny (F_1). An important consequence of the homozygosity and homogeniety of the inbred lines is that the hybrid between any two inbreds will always be the same. Once the inbreds that give the best hybrid have been identified, the hybrid seed can be reproduced indefinitely as long as the homogeneity of the inbred parents is maintained.

A single cross hybrid is produced when two inbred lines are crossed to produce the F_1 progeny. A double cross hybrid, is produced from four inbred lines crossed in pairs (A×B and C× D) and then the two F_1 hybrids are crossed again (A×B)×(C× D). Much of the hybrid vigor exhibited by F_1 hybrids is lost in the next generation (F_2). Consequently, seed from hybrid varieties is not used for planting stock.

Hybrid corn seed can be produced by manual detasseling. Alternate strips of two inbred varieties of corn are planted in a field, and the pollen-bearing tassels are removed from one of the inbreds (female). Providing that there is sufficient isolation from sources of foreign corn pollen, the ears of the detasseled inbred will be fertilized only from pollen from the other inbred (male), and the resulting seed is therefore hybrid and will form hybrid plants.

The laborious detasseling process can be avoided by using cytoplasmic male-sterile (CMS) inbreds. Plants of a CMS inbred are fertilized with pollen from another inbred that is not male-sterile. Pollen from the second inbred can contribute genes that make the hybrid plants male-fertile. Usually seed from detasseled normal corn and CMS produced seed of the same hybrid is blended to insure that adequate pollen loads are available for fertilization when the hybrid plants are grown.

Corn is an important and valuable field crop. Thus, a continuing goal of plant breeding is to develop stable high yielding corn hybrids that are agronomically sound. The reasons for this goal are obvious: to maximize the amount of grain produced on the land used and to supply food for both animals and humans.

SUMMARY OF THE INVENTION

According to the invention, there is provided a hybrid corn plant, designated as 3394, produced by crossing two Pioneer Hi-Bred International, Inc. proprietary inbred corn lines. This invention thus relates to the hybrid seed 3394, the hybrid plant produced from the seed, and variants, mutants, and trivial modifications of hybrid 3394. This hybrid corn plant is characterized by superior yield for maturity, excel-

00054

lent seedling vigor, very good roots and stalks, and exceptional stay green. It is widely adapted, but performs best in the Central and Eastern Corn Belt.

DEFINITIONS

In the description and examples that follow, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

ADVANTAGE=It is the advantage the hybrid to be patented has compared to another hybrid for yield (bushels per acre), moisture (drier is an advantage), income, population, stand (plants not stalk lodging is an advantage), roots (plants not root lodging is an advantage), and test weight, respectively, in strip tests.

BAR PLT=BARREN PLANTS. This is the percent of plants per plot that were not barren (lack ears). 5 B/STK=BRITTLE STALKS RATING. This is a 1-9 rating where a 1, 5, and 9 represent serious, average, and little or no potential for brittle stalk breakage.

BRT STK=BRITTLE STALKS. This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR=YIELD (BUSHELS/ACRE). Actual yield of the grain at harvest adjusted to 15.5% moisture. ABS is in absolute terms and % MN is percent of the mean for the experiments in which the hybrid was grown.

D/D=DRYDOWN. This represents the relative rate at which a hybrid will reach acceptable harvest moisture compared to other hybrids on a 1-9 rating scale. A high score indicates a hybrid that dries relatively fast while a low score indicates a hybrid that dries slowly.

D/E=DROPPED EARS RATING. This is a 1-9 rating where a 1, 5, and 9 represent serious, average, and little or no ear droppage potential, respectively.

DRP EAR=DROPPED EARS. This is a measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

D/T=DROUGHT TOLERANCE. This represents a 1-9 rating for drought tolerance, and is based on data obtained under stress conditions. A high score indicates good drought tolerance and a low score indicates poor drought tolerance.

E/HT=EAR HEIGHT RATING. This is a 1-9 rating with a 1, 5, and 9 representing a very low, average, and very high ear placement, respectively.

EAR HT=EAR HEIGHT. The ear height is a measure from the ground to the top developed ear node attachment and is measured in inches.

EST CNT=EARLY STAND COUNT. This is a measure of the stand establishment in the spring and represents the number of plants that emerge on a per plot basis for the hybrid.

GDU BL=GDU TO BLACKLAYER. This is the number of growing degree units required for the hybrid to reach blacklayer from the time that it was planted. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

$$GDU = \frac{(\text{Max.} + \text{Min.})}{2} - 50$$

The highest maximum used is 86° F. and the lowest minimum used is 50° F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SHD=GDU TO SHED. The number of growing degree units (GDUs) or heat units required for a hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting.

GDU SLK=GDU TO SILK. The number of growing degree units required for a hybrid to have approximately 50 percent of the plants with silk emergence from time of planting.

GRN APP=G/A=GRAIN APPEARANCE. This is a 1 to 9 rating for the general quality of the shelled grain as it is harvested based on such factors as the color of the harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality and low scores indicate poor grain quality.

H/POP=YIELD AT HIGH DENSITY. Yield ability at relatively high plant densities on a 1-9 relative rating system with a higher number indicating the hybrid responds well to high plant densities for yield relative to other hybrids. A 1, 5, and 9 would represent very poor, average, and very good yield response, respectively, to increased plant density.

INCOME/ACRE: Relative income per acre assuming drying costs of two cents per point above 15.5 percent harvest moisture and market price of $2.25 per bushel.

L/POP=YIELD AT LOW DENSITY. Yield ability at relatively low plant densities on a 1-9 relative system with a higher number indicating the hybrid responds well to low plant densities for yield relative to other hybrids. -A 1, 5, and 9 would represent very poor, average, and very good yield response, respectively, to low plant density.

MST=MOIST=HARVEST MOISTURE. Harvest moisture is the actual percentage moisture of the grain at harvest.

MST RM=MOISTURE RM. This represents the Minnesota Relative Maturity Rating (MN RM) for the hybrid and is based on the harvest moisture of the grain relative to a standard set of checks of previously determined MN RM rating. Linear regression analysis is used to compute this rating.

P/HT=PLANT HEIGHT RATING. This is a 1-9 rating with a 1, 5, and 9 representing a very short, average, and very tall hybrid, respectively.

PLT HT=PLANT HEIGHT. This is a measure of the height of the plant from the ground to the tip of the tassel in inches.

PoP K/ACRE: Plants per 0.001 acre.

PERCENT WINS: For yield, moisture, income, populations, stand, roots, and test weight, it would be the percentage of comparisons that the hybrid to be patented yielded more, had lower harvest moisture percentage, had greater income per acre, had better stalks, had better roots, and had higher test weight, respectively, in strip tests.

R/L=ROOT LODGING RATING. A 1-9 rating where a higher score indicates less root lodging potential (1 is very poor, 5 is intermediate, and 9 is very good, respectively, for resistance to root lodging).

ROOT (%): Percentage of plants that did not root lodge (lean greater than 30 degrees from vertical) taken on strip test plots.

RT LDG=ROOT LODGING. Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

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S/L=STALK LODGING RATING. This is a 1–9 rating where a higher score indicates less stalk lodging potential (1 is very poor, 5 is intermediate, and 9 is very good, respectively, for resistance to stalk lodging).

SDG VGR=S/VIG=SEEDLING VIGOR. This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor and a low score indicates poorer vigor.

STA GRN=STGR=STAY GREEN. Stay green is the measure of plant health near the time of black layer formation (physiological maturity) using a 1–9 visual rating. A high score indicates better late-season plant health and a low score indicates poor plant health.

STAND (%): Percentage of plants that did not break (lodge) below the ear taken on strip test plots.

STK LDG=STALK LODGING. This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

T/WT=TEST WEIGHT RATING. This is a 1–9 relative rating with a 1, 5, and 9 indicating very low, average, and very high test weight, respectively.

TST WTA=TEST WEIGHT. The measure of the weight of the grain in pounds for a given volume (bushel) adjusted for percent moisture.

YLD=YIELD FOR MATURITY. This represents a 1–9 rating for a hybrid's yield potential. 1, 5, and 9 would represent very poor, average, and very high yield potential, respectively, relative to other hybrids of a similar maturity.

DETAILED DESCRIPTION OF THE INVENTION

Pioneer Brand Hybrid 3394 is a single cross, yellow endosperm, dent corn hybrid with superior yield in its maturity. It has stable yield across environments, has above average grain appearance with average test weight, and has exceptional stay green. 3394 has excellent seedling vigor and very good drought tolerance. The inventor has observed that the leaf angle is semi upright and the leaf is short and wide, which is a unique characteristic of this hybrid. The hybrid has the potential to form an abscision layer and drop ears free from the husk.

This hybrid has the following characteristics based on the descriptive data collected primarily at Johnston, Iowa.

VARIETY DESCRIPTION INFORMATION
HYBRID = PIONEER BRAND 3394
Type: Dent Region Best Adapted: Central Corn Belt

A. Maturity:

Minnesota Relative Maturity Rating (harvest moisture):	111
GDU's to Physiological maturity (black layer):	2760
GDU's to 50% Silk:	1442

$$GDU's = \frac{[Max.\ Temp.\ (< 86^\circ F.) + Min.\ Temp\ (> 50^\circ F.)]^*}{2} - 50$$

B. Plant Characteristics:

Plant height (to tassel tip):	296 cm
Length of top ear internode:	16 cm
Number of ears per stalk:	Single

-continued

VARIETY DESCRIPTION INFORMATION
HYBRID = PIONEER BRAND 3394
Type: Dent Region Best Adapted: Central Corn Belt

Ear height (to base of top ear):	101 cm
Number of tillers:	None
Cytoplasm type:	Normal
C. Leaf:	
Color:	Dark Green (B14)
Angle from Stalk:	<30 degrees
Marginal Waves:	Few (WP9)
Number of Leaves (mature plants):	20
Sheath Pubescence:	Light (W22)
Longitudinal Creases:	Many (PA11)
Length (Ear node leaf):	94 cm
Width (widest point, ear node leaf):	10 cm
D. Tassel:	
Number lateral branches:	6
Branch Angle from central spike:	>45 degrees
Pollen Shed:	Heavy (KY21)
Peduncle Length (top leaf to basal branches):	22 cm
Anther Color:	Purple
Glume Color:	Green
E. Ear (Husked Ear Data Except When Stated Otherwise):	
Length:	20 cm
Weight:	238 gm
Mid-point Diameter:	47 mm
Silk Color:	Pink
Husk Extension (Harvest stage):	Short (Ears Exposed)
Husk Leaf:	Short (< 8 cm)
Taper of Ear:	Slight
Position of Shank (dry husks):	Upright
Kernel Rows:	Slightly Curved, Distinct Number = 16
Husk Color (fresh):	Light Green
Husk Color (dry):	Buff
Shank Length:	11 cm
Shank (No. of internodes):	7
F. Kernel (Dried):	
Size (from ear mid-point)	
Length:	13 mm
Width:	8 mm
Thick:	4 mm
Shape Grade (% rounds):	<20%
Pericarp Color:	Colorless
Aleurone Color:	Homozygous Yellow
Endosperm Color:	Yellow
Endosperm Type:	Normal Starch
Gm Wt/100 Seeds (unsized):	34 gm
G. Cob:	
Diameter at mid-point:	26 mm
Strength:	Strong
Color:	Red
H. Diseases:	
Corn Lethal Necrosis (MCMV = Maize Chlorotic Mottle Virus and MDMV = Maize Dwarf Mosaic Virus):	Resistant
Common Smut (*U. maydis*):	Highly Resistant
Anthracnose Stalk Rot (*C. graminicola*):	Intermediate
S. Leaf Blight (*B. maydis*):	Intermediate
N. Leaf Blight (*E. turcicum*):	Intermediate
Gray Leaf Spot (*C. zeae*):	Susceptible
Goss's Wilt (*C. nebraskense*):	Highly Resistant
Head Smut (*S. reiliana*):	Highly Resistant
Fusarium Ear Mold (*F. moniliforme*):	Resistant
I. Insects:	
European Corn Borer-1 Leaf Damage (Pre-flowering):	Susceptible
European Corn Borer-2	Intermediate

-continued

VARIETY DESCRIPTION INFORMATION
HYBRID = PIONEER BRAND 3394
Type: Dent Region Best Adapted: Central Corn Belt

(Post-flowering):	
The above descriptions are based on a scale of 1–9, 1 being highly susceptible, 9 being highly resistant.	
S (Susceptible):	Would generally represent a score of 1–3.
I (Intermediate):	Would generally represent a score of 4–5.
R (Resistant):	Would generally represent a score of 6–7.
H (Highly Resistant):	Would generally represent a score of 8–9. Highly resistant does not imply the inbred is immune.
J. Variety Most Closely Resembling:	
Character	Hybrid
Maturity	Pioneer Brand 3379
Usage	Pioneer Brand 3379

*If maximum is greater than 86 degrees fahrenheit, then 86 is used and if minimum is less than 50, then 50 is used. Heat units accumulated daily and can not be less than 0.

Items B, C, D, E, F, and G are based on a maximum of two reps of data primarily from Johnston, Iowa in 1990.

This invention includes the hybrid corn seed of 3394, the hybrid corn plant produced from the hybrid corn seed, and variants, mutants, and modifications of 3394. This invention also relates to the use of 3394 in producing three-way and double cross hybrids.

The terms variant, trivial modification, and mutant refer to a hybrid seed where a plant produced by that hybrid seed which is phenotypically similar to 3394.

As used herein, the term "plant" includes plant cells, plant protoplast, plant cell or tissue culture from which corn plants can be regenerated, plant calli, plant clumps and plant cells that are intact in plants or parts of plants, such as flowers, kernels, ears, cobs, leaves, husks, stalks and the like.

Tissue culture of corn is described in European Patent Application, publication number 160,390, incorporated herein by reference. Corn tissue culture procedures are also described in Green and Rhodes, "Plant Regeneration in Tissue Culture of Maize," *Maize for Biological Research*, (Plant Molecular Biology Association, Charlottesville, Va. 1982) at 367–372 and in Duncan, et al., "The Production of Callus Capable of Plant Regeneration from Immature Embryos of Numerous Zea Mays Genotypes," 165 *Planta* 322–332 (1985).

USES OF CORN

Corn is used as human food, livestock feed, and as raw material in industry. The food uses of corn, in addition to human consumption of corn kernels, include both products of dry- and wet-milling industries. The principal products of corn dry milling are grits, meal and flour. The corn wet-milling industry can provide starch, syrups, and dextrose for food use. Corn oil is recovered from corn germ, which is a by-product of both dry- and wet-milling industries.

Corn is also used extensively as livestock feed primarily to beef cattle, dairy cattle, hogs, and poultry.

Industrial uses of corn are mainly from corn starch from the wet-milling industry and corn flour from the dry-milling industry. The industrial applications of corn starch and flour are based on functional properties, such as viscosity, film formation, adhesive properties, and ability to suspend particles. The corn starch and flour have application in the paper and textile industries. Other industrial uses include applications in adhesives, building materials, foundry binders, laundry starches, explosives, oil-well muds, and other mining applications.

Plant parts other than the grain of corn are also used in industry. Stalks and husks are made into paper and wallboard and cobs are used for fuel and to make charcoal.

The seed of 3394, the hybrid corn plant produced from the seed, and various parts of the hybrid corn plant can be utilized for human food, livestock feed, and as a raw material in industry.

EXAMPLE 1

Research Comparisons for Pioneer Hybrid 3394

Comparisons of the characteristics for Pioneer Brand Hybrid 3394 were made against Pioneer Brand Hybrids 3503, 3417, 3398, 3379, 3362, and 3241; Garst Brand Hybrid GR8532; and Wyffel Brand Hybrids WYF670 and WYF627. These hybrids are grown in the Central and Eastern Corn Belt and have similar maturity. Table 1A compares Pioneer Brand 3394 to Pioneer Brand 3503. 3394 has higher yield and grain harvest moisture, but lower test weight than 3503. 3394 is a taller hybrid with higher ear placement and flowers (GDU Shed) later than 3503. Compared to 3503, 3394 has poorer grain appearance, better stay green, better resistance to stalk lodging, but is more susceptible to root lodging and has fewer brittle stalks.

The results in Table 1B compare Pioneer Brand Hybrid 3394 to Pioneer Brand Hybrid 3417. 3394 has higher yield, grain harvest moisture, and test weight than 3417. 3394 is a taller hybrid, has higher ear placement, and flowers (GDU Shed) later than 3417. 3394 is better agronomically than 3417, having better grain appearance and stay green, better stalk lodging resistance and fewer brittle stalks, but is more susceptible to root lodging.

Table 1C results show Pioneer Brand Hybrid 3394 is higher yielding but has lower grain moisture and test weight than Pioneer Brand Hybrid 3398. 3394 has more barren plants, but has better seedling vigor and more plants are established early than 3398. 3394 is taller and has a higher ear placement compared to 3398. 3394 flowers (GDU Shed) later than 3398. 3394 has slightly poorer grain appearance and is more susceptible to root lodging than 3398.

The results in Table 1D compare Pioneer Brand Hybrid 3394 to Pioneer Brand Hybrid 3379. 3394 outyields and has higher test weight but slightly lower grain moisture than 3379. 3394 and 3379 have similar early stand count, but 3394 has better seedling vigor. 3394 has better stay green and is more resistant to stalk and root lodging than 3379.

Table 1E, comparing Pioneer Brand Hybrid 3394 to Pioneer Brand Hybrid 3362, shows 3394 has higher yield, grain moisture, and test weight than 3362. 3394 is a taller hybrid, has higher ear placement, and sheds (GDU Shed) later than 3362. 3394 is more susceptible to root lodging, but has better stay green and stalk lodging resistance than 3362.

Table 1F compares Pioneer Brand 3394 to Pioneer Brand 3241. 3394 has higher yield and test weight and lower grain moisture than 3241. 3394 is shorter with lower ear placement and flowers (GDU Shed) slightly earlier than 3241. Compared to 3241, 3394 has poorer grain appearance, more susceptibility to stalk lodging, more resistance to root lodging, and fewer brittle stalks.

Table 1G results show Pioneer Brand Hybrid 3394 has higher grain yield but lower grain moisture and test weight than Garst Brand Hybrid GR8532. 3394 is significantly taller and has a higher ear placement than GR8532. 3394 flowers (GDU Shed) later than GR8532. 3394 has better stay green and stalk lodging resistance, but is more susceptible to root lodging than GR8532.

Table 1H compares Pioneer Brand Hybrid 3394 to Wyffels Brand Hybrid WYF670. 3394 significantly outyields WYF670 but has similar test weight and lower grain moisture. 3394 is taller with higher ear placement and flowers (GDU Shed) later than WYF670. Agronomically, 3394 is better than WYF670, having better grain appearance, stay green, and stalk and root lodging resistance.

Table 1I, comparing Pioneer Brand Hybrid 3394 to Wyffels Brand Hybrid WYF627, shows 3394 is higher yielding, has higher test weight, but has lower grain moisture than WYF627. 3394 is a taller hybrid and has higher ear placement than WYF627. 3394 flowers (GDU Shed) later than WYF627. 3394 has significantly better stay green and stalk lodging resistance compared to WYF627.

TABLE 1A

VARIETY #1 - 3394
VARIETY #2 - 3503

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
89	1	156.9	110	17.0	109.7	46.7	5.9	61.7	97.5	1345	59.2	6.2	5.3	89.9	94.4	
	2	144.2	102	17.5	104.8	43.5	5.9	61.1	98.3	1310	61.2	5.8	5.6	83.1	98.3	
	LOCS	9	9	9	3	3	4	7	5	3	9	9	4	7	5	
	PROB	.005#	.007#	.031+	.041+	.101	.000#	.739	.186	.109	.000#	.486	.724	.087*	.525	
90	1	163.1	111	20.6	98.2	45.6	7.0	60.4	99.5	1443	57.0	7.0	6.6	94.6	96.7	98.7
	2	146.2	99	20.3	91.5	41.0	5.9	57.6	99.8	1375	58.7	7.6	4.4	90.9	97.6	97.5
	LOCS	182	182	182	97	97	103	125	123	60	180	124	99	175	57	9
	PROB	.000#	.000#	.001#	.000#	.000#	.000#	.000#	.029+	.000#	.000#	.000#	.000#	.000#	.461	.086*
TOTAL SUM	1	162.8	111	20.4	98.5	45.7	6.9	60.5	99.4	1438	57.1	7.0	6.6	94.4	96.5	98.7
	2	146.1	100	20.1	91.9	41.1	5.9	57.7	99.7	1372	58.8	7.4	4.4	90.6	97.7	97.5
	LOCS	191	191	191	100	100	107	132	128	63	189	133	103	182	62	9
	DIFF	16.7	11	0.3	6.7	4.6	1.0	2.7	0.3	66	1.8	0.5	2.2	3.8	1.2	1.2
	PROB	.000#	.000#	.004#	.000#	.000#	.000#	.000#	.016+	.000#	.000#	.000#	.000#	.000#	.345	.086*

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1B

VARIETY #1 - 3394
VARIETY #2 - 3417

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
89	1	159.7	109	18.2	106.6	48.6	5.8	60.9	98.5	1353	58.5	6.3	5.3	92.0	96.2	97.0
	2	154.0	105	17.9	103.4	41.6	5.8	61.2	99.2	1308	57.7	5.7	4.1	81.2	93.6	94.9
	LOCS	18	18	18	8	8	6	12	9	6	18	18	7	15	9	1
	PROB	.174	.181	.209	.011+	.000#	.862	.637	.300	.003#	.021+	.133	.047+	.009#	.124	
90	1	164.3	110	20.3	98.6	45.4	7.0	60.7	99.6	1448	57.0	7.2	6.3	95.1	96.6	97.8
	2	147.7	99	19.6	94.8	37.8	5.8	59.0	99.8	1392	56.8	6.9	4.5	92.1	99.0	93.9
	LOCS	252	252	253	130	130	131	166	161	68	250	161	134	250	80	15
	PROB	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.028+	.000#	.000#	.009#	.000#	.000#	.002#	.095*
TOTAL SUM	1	164.0	110	20.2	99.0	45.6	7.0	60.7	99.5	1440	57.1	7.1	6.3	94.9	96.6	97.7
	2	148.1	99	19.5	95.3	38.0	5.8	59.2	99.7	1385	56.8	6.8	4.5	91.4	98.4	94.2
	LOCS	270	270	271	138	138	137	178	170	74	268	179	141	265	89	16
	DIFF	15.8	10	0.7	3.7	7.6	1.2	1.5	0.2	55	0.3	0.3	1.8	3.5	1.9	3.5
	PROB	.000#	.000#	.000#	.000#	.000#	.000#	.000#	.014+	.000#	.000#	.003#	.000#	.000#	.009#	.108

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1C

VARIETY #1 - 3394
VARIETY #2 - 3398

YEAR	VAR #	BU ACR	BU ACR	MST	BAR PLT	PLT HT	EAR HT	SDG VGR	EST CNT	DRP EAR

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TABLE 1C-continued

YEAR	#	ABS	% MN	ABS	ABS	ABS	ABS	ABS	ABS	ABS
88	1	105.1	115	19.3	90.9	95.0	41.5	5.8	53.5	100.0
	2	97.2	106	21.3	93.5	87.8	34.3	5.8	60.3	100.0
	LOCS	2	2	2	2	2	2	3	2	2
	PROB	.499	.499	.097*	.156	.109	.022+	.000#	.476	1.00
89	1	172.3	111	19.4		101.0	48.5	6.3	58.5	99.7
	2	152.4	98	20.2		101.7	41.0	6.3	58.4	100.0
	LOCS	8	8	8		3	3	3	5	4
	PROB	.005#	.007#	.056*		.881	.013+	1.00	.960	.391*
90	1	165.0	109	20.5		100.7	44.1	7.1	61.3	99.6
	2	155.1	102	20.9		94.4	38.8	5.8	59.1	99.8
	LOCS	94	94	95		40	40	40	64	67
	PROB	.000#	.000#	.003#		.000#	.000#	.000#	.000#	.119
TOTAL SUM	1	164.4	109	20.4	90.9	100.4	44.3	7.0	60.9	99.7
	2	153.8	102	20.9	93.5	94.6	38.7	5.9	59.0	99.8
	LOCS	104	104	105	2	45	45	46	71	73
	DIFF	10.6	7	0.5	4.5	5.9	5.5	1.1	1.9	0.2
	PROB	.000#	.000#	.000#	.156	.000#	.000#	.000#	.000#	.090*

YEAR	VAR #	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
88	1	1453	57.5	7.3	5.2	99.4	98.3	
	2	1413	56.4	6.3	3.8	98.3	100.0	
	LOCS	2	2	2	3	2	2	
	PROB	.156	.296	.000#	.094*	.500	.500	
89	1	1415	57.5	6.3	5.5	91.4	98.8	97.0
	2	1257	57.3	6.3	5.0	77.3	97.0	98.9
	LOCS	3	8	8	3	7	5	1
	PROB	.075*	.714	.000#	.729	.046+	.305	
90	1	1428	57.1	6.7	6.3	95.5	95.4	96.8
	2	1369	57.3	7.0	4.1	92.0	98.2	95.5
	LOCS	21	95	43	33	88	34	9
	PROB	.000#	.013+	.065*	.000#	.003#	.062*	.414
TOTAL SUM	1	1428	57.11	6.6	6.2	95.3	95.9	96.9
	2	1371	57.3	6.8	4.1	91.0	98.2	95.7
	LOCS	26	105	53	38	97	41	10
	DIFF	57	0.2	0.2	2.0	4.2	2.2	1.2
	PROB	.000#	.053*	.163	.000#	.000#	.085*	.484

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1D

VARIETY #1 - 3394
VARIETY #2 - 3379

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	BAR PLT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS
88	1	125.7	110	20.4	91.4	89.6	39.4	6.2	59.6	99.9
	2	116.3	102	22.3	90.9	88.8	37.9	5.9	64.4	99.9
	LOCS	16	16	16	5	9	9	10	9	13
	PROB	.050*	.075*	.0019	.805	.761	.273	.440	.008#	.700
89	1	162.8	108	20.1		109.9	50.8	6.6	59.7	98.8
	2	154.2	102	19.8		111.1	50.4	5.5	60.1	99.5
	LOCS	43	43	43		18	18	16	28	22
	PROB	.000#	.000#	.064*		.261	.469	.000#	.598	.141
90	1	164.6	109	20.1		100.2	45.7	7.0	59.5	98.6
	2	150.2	100	20.2		100.8	45.1	5.9	59.4	99.7
	LOCS	271	271	272		143	143	141	173	145
	PROB	.000#	.000#	.236		.054*	.036+	.000#	.668	.340
TOTAL SUM	1	162.5	109	20.1	91.4	100.6	45.9	6.9	59.5	99.5
	2	149.1	100	20.3	90.9	101.2	45.3	5.8	59.7	99.7
	LOCS	330	330	331	5	170	170	167	210	180
	DIFF	13.4	9	0.2	0.5	0.6	0.6	1.1	0.2	0.1
	PROB	.000#	.000#	.110	.803	.054*	.015+	.000#	.507	.002

YEAR	VAR #	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
88	1	1441	57.3	8.0	4.9	94.3	96.2	100.0

00059

TABLE 1D-continued

	2	1444	56.5	7.6	5.2	90.3	70.5	100.0
	LOCS	5	16	13	9	15	5	1
	PROB	.872	.0018	.213	.665	.234	.231	
89	1	1364	57.3	6.1	6.0	92.4	97.2	98.0
	2	1353	56.6	6.4	5.0	91.6	92.6	99.5
	LOCS	14	43	38	14	36	17	2
	PROB	.086*	.0008	.249	.725*	.557	.256*	.166
90	1	1438	57.0	7.3	6.1	94.5	96.5	97.7
	2	1434	57.0	7.2	5.1	94.3	95.5	96.5
	LOCS	76	267	180	159	258	69	16
	PROB	.171	.725	.758	.0008	.724	.141	.216
TOTAL SUM	1	1427	57.1	7.1	6.0	94.3	96.6	97.8
	2	1423	56.9	7.1	5.1	93.8	93.6	97.0
	LOCS	95	326	231	182	309	91	19
	DIFF	04	0.1	0.0	0.0	0.4	3.0	0.8
	PROB	.076*	.0088	.948	.0008	.370	.018+	.304

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1E

VARIETY #1 - 3394
VARIETY #2 - 3362

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	FLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
89	1	164.1	109	19.9	103.9	50.5	6.6	59.4	99.0	1369	57.3	6.6	6.2	90.6	95.3	97.0
	2	149.4	100	19.8	102.4	47.3	5.0	57.3	98.8	1336	56.9	6.0	3.8	80.2	94.6	99.1
	LOCS	21	21	21	8	8	9	12	14	8	21	16	5	20	9	1
	PROB	.007#	.009#	.786	.251	.091*	.016+	.200	.543	.006#	.012+	.250	.054*	.005#	.533	
90	1	162.8	110	20.1	98.1	44.8	7.0	60.6	99.5	1446	57.2	7.1	6.3	94.9	96.4	97.8
	2	143.7	98	19.7	95.0	41.6	5.5	58.2	99.7	1413	56.5	7.0	4.4	91.3	97.9	97.1
	LOCS	221	221	222	115	115	121	148	139	70	220	130	121	212	77	17
	PROB	.000#	.000#	.001#	.000#	.000#	.000#	.000#	.007*	.000#	.000#	.576	.000#	.000#	.012+	.472
TOTAL SUM	1	162.9	110	20.1	98.5	45.2	6.9	60.5	99.5	1438	57.2	7.0	6.3	94.5	96.3	97.8
	2	144.2	98	19.7	95.5	42.0	5.5	58.2	99.6	1405	56.5	6.9	4.4	90.3	97.6	97.2
	LOCS	242	242	243	123	123	128	160	153	78	241	146	126	221	86	18
	DIFF	18.8	12	0.4	3.0	3.2	1.4	2.4	0.2	33	0.6	0.1	1.9	4.2	1.3	0.6
	PROB	.000#	.000#	.001#	.000#	.000#	.000#	.000#	.109	.000#	.000#	.366	.000#	.000#	.020+	.548

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1F

VARIETY #1 - 3394
VARIETY #2 - 3241

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	FLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
88	1	136.5	109	20.8	70.5	34.5	5.0		100.0		57.4	8.3	6.0	92.6	93.4	
	2	146.5	118	23.2	79.5	39.0	6.0		100.0			56.3	7.8	4.0	97.4	46.2
	LOCS	6	6	6	2	2	1		5							
	PROB	.466	.441	.016+	.205	.205			1.00		.137	.580		.207	.456	
89	1	173.8	107	24.2	110.0	54.0	7.5	57.4	99.7	1418	55.1	5.8	6.7	92.5	98.0	98.9
	2	171.1	105	25.3	115.3	57.3	6.9	57.1	100.0	1398	55.0	7.1	6.8	96.2	90.4	97.8
	LOCS	15	15	15	6	6	4	9	7	5	15	15	6	14	7	1
	PROB	.508	.532	.000#	.099*	.063*	.239	.891	.173	.247	.634	.001#	.856	.058*	.169	
90	1	170.0	109	21.7	101.4	47.8	7.2	57.0	99.8	1428	56.2	7.1	6.2	94.2	99.4	
	2	164.2	105	23.9	107.4	50.3	7.0	56.8	99.7	1441	55.7	7.6	6.4	95.1	97.0	
	LOCS	93	93	93	47	47	38	57	51	24	91	82	62	90	10	
	PROB	.000#	.000#	.000#	.000#	.000#	.168	.682	.385	.015+	.000#	.000#	.260	.352	.077*	
TOTAL SUM	1	168.7	109	22.0	101.2	48.0	7.2	57.1	99.8	1426	56.1	7.0	6.2	93.9	98.3	98.9
	2	164.1	106	24.0	107.2	50.7	7.0	56.8	99.8	1433	55.6	7.5	6.4	95.4	89.2	97.8
	LOCS	114	114	114	55	55	43	66	63	29	112	103	69	109	19	1

00060

TABLE 1F-continued

VARIETY #1 - 3394
VARIETY #2 - 3241

DIFF.	4.6	3	2.0	6.1	2.7	0.3	0.2	0.1	08	0.5	0.5	0.2	1.4	9.1	1.1
PROB	.002#	.004#	.000#	.000#	.000#	.127	.575	.556	.165	.000#	.000#	.340	.083*	.075*	

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1G

VARIETY #1 - 3394
VARIETY #2 - GR8532

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
90	1	162.5	110	19.5	94.4	46.1	6.7	61.7	99.5	1445	57.2	7.2	6.2	93.2	96.5	99.1
	2	137.1	93	20.9	83.4	37.9	5.6	60.7	99.8	1347	57.5	7.3	4.1	89.3	98.3	99.1
	LOCS	94	94	94	55	55	67	70	64	32	92	63	56	92	34	7
	PROB	.000#	.000#	.000#	.000#	.000#	.000#	.044+	.064*	.000#	.008#	.572	.000#	.001#	.131	.961
TOTAL SUM	1	162.5	110	19.5	94.4	46.1	6.7	61.7	99.5	1445	57.2	7.2	6.2	93.2	96.5	99.1
	2	137.1	93	20.9	83.4	37.9	5.6	60.7	99.8	1347	57.5	7.3	4.1	89.3	98.3	99.1
	LOCS	94	94	94	55	55	67	70	64	32	92	63	56	92	34	7
	DIFF	25.4	17	1.4	11.1	8.2	1.1	1.1	0.3	98	0.3	0.1	2.1	3.8	1.8	0.0
	PROB	.000#	.000#	.000#	.000#	.000#	.000#	.044+	.064*	.000#	.008#	.572	.000#	.001#	.131	.961

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 1H

VARIETY #1 - 3394
VARIETY #2 - WYN670

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	BAR PLT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS
88	1	108.7	113	20.4	90.4	94.3	41.7	5.6	58.6	99.6
	2	94.9	99	22.9	94.0	83.5	32.7	5.6	61.8	100.0
	LOCS	5	5	5	3	3	3	4	4	3
	PROB	.010+	.004#	.025+	.163	.000#	.102	.000#	.375	.423
89	1	155.5	107	18.3		110.2	50.5	6.4	61.4	98.4
	2	137.2	94	20.2		98.9	41.4	6.2	60.3	99.9
	LOCS	20	20	20		9	9	7	12	14
	PROB	.000#	.000#	.000#		.000#	.000#	.766	.274	.005#
98	1	163.2	110	20.0		102.0	45.2	7.1	59.4	99.5
	2	139.3	94	20.9		90.5	36.8	5.9	58.2	99.8
	LOCS	119	119	119		64	64	70	83	60
	PROB	.000#	.000#	.000#		.000#	.000#	.000#	.010+	.056*
TOTAL SUM	1	160.2	110	19.8	90.4	102.7	45.7	6.9	59.6	99.3
	2	137.5	94	20.9	94.0	91.2	37.2	5.9	58.6	99.9
	LOCS	144	144	144	3	76	76	81	99	77
	DIFF	22.7	16	1.1	3.6	11.5	8.5	1.1	1.0	0.5
	PROB	.000#	.000#	.000#	.163	.000#	.000#	.000#	.018+	.001#

YEAR	VAR #	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
88	1	1432	57.2	7.3	4.5	94.6	98.1	
	2	1355	55.5	6.0	5.1	99.3	100.0	
	LOCS	3	5	5	4	5	3	
	PROB	.175	.002#	.019+	.703	.430	.196	
89	1	1317	58.5	6.4	5.6	92.6	95.8	97.0
	2	1254	58.6	5.9	4.3	84.1	92.7	100.0
	LOCS	5	20	20	5	15	8	1
	PROB	.007#	.587	.102	.019+	.018+	.303	
90	1	1448	57.2	7.2	6.2	95.0	96.6	99.2
	2	1371	57.5	6.9	4.1	91.2	95.5	99.3
	LOCS	39	118	80	71	109	30	7

00062

TABLE 1H-continued

TOTAL SUM	PROB	.000#	.049*	.011*	.000#	.000#	.384	.821
	1	1433	57.4	7.1	6.1	94.9	96.5	98.9
	2	1357	57.6	6.6	4.1	90.7	95.3	99.4
	LOCS	47	143	105	80	129	41	8
	DIFF	76	0.1	0.4	2.0	4.2	1.3	0.5
	PROB	.000#	.187	.001#	.000#	.000#	.242	.447

* = 10% SIG
- = 5% SIG
= 1% SIG

TABLE 1I

VARIETY #1 - 3394
VARIETY #2 - WYF627

YEAR	VAR #	BU ACR ABS	BU ACR % MN	MST ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	DRP EAR ABS	GDU SHD ABS	TST WTA ABS	GRN APP ABS	STA GRN ABS	STK LDG ABS	RT LDG ABS	BRT STK ABS
89	1	146.7	104	17.8	125.0	53.8	7.2	62.5	98.2	1280	58.9	6.3		98.0	100.0	
	2	129.9	91	18.3	116.8	50.5	7.0	59.2	99.0	1230	58.5	6.3		96.0	100.0	
	LOCS	5	5	5	2	2	3	3	5	1	5	5		2	1	
	PROB	.019*	.032*	.100	.170	.234	.742	.063*	.341		.451	.000#		.291		
90	1	157.8	110	21.9	101.1	46.0	6.8	56.8	99.5	1446	56.2	7.1	6.4	94.9	97.2	100.0
	2	143.0	99	22.3	98.1	43.9	6.0	57.5	99.6	1427	55.5	6.8	3.5	87.1	97.0	100.0
	LOCS	57	57	57	23	23	26	22	36	14	57	55	26	57	17	2
	PROB	.000#	.000#	.073*	.003#	.002#	.008#	.443	.563	.017*	.000#	.270	.000#	.000#	.610	1.00
TOTAL	1	156.9	110	21.6	103.0	46.6	6.8	57.3	99.3	1433	56.4	7.0	6.4	95.0	97.4	100.0
SUM	2	141.6	99	21.9	99.6	44.4	6.1	57.8	99.5	1414	55.8	6.8	3.5	87.4	97.1	100.0
	LOCS	62	62	62	25	25	29	25	41	15	62	60	26	59	18	2
	DIFF	15.0	11	0.4	3.4	2.2	0.7	0.3	0.2	21	0.6	0.2	2.9	7.5	0.3	0.0
	PROB	.000#	.000#	.048-	.001#	.001#	.007#	.683	.343	.008#	.000#	.287	.000#	.000#	.609	1.00

* = 10% SIG
- = 5% SIG
= 1% SIG

EXAMPLE 2

Strip Test Data for Hybrid 3394

Comparison data was collected from strip tests that were grown by farmers. Each hybrid was grown in strips of 4, 6, 8, 12, etc. rows in fields depending on the size of the planter used. The data was collected from strip tests that had the hybrids in the same area and weighed. The moisture percentage was determined and bushels per acre was adjusted to 15.5 percent moisture. The number of comparisons represent the number of locations or replications for the two hybrids that were grown in the same field in close proximity and compared.

Comparison strip testing was done between Pioneer Brand Hybrid 3394 and Pioneer Brand Hybrids 3503, 3417, 2398, 3379, 3362, and 3241; Garst Brand Hybrid 8532; and Wyffels Brand Hybrid WYF670. The comparisons came from all the hybrid's adapted growing areas in the United States.

These results are presented in Table 2. The results show Pioneer Brand Hybrid 3394 had a yield advantage over compared hybrids except Pioneer Hybrid 3398 where it had a disadvantage of 2.8 bushels per acre. 3394 had a slight moisture disadvantage against Pioneer Hybrids 3503, 3417, and 3362, and Garst Hybrid 8532. 3394 showed a greater income advantage to the farmer based on adjusted gross income over all hybrids compared except Pioneer Hybrid 3398 where the disadvantage was $4.18 per acre. With the exception of Pioneer Hybrid 3398, 3394's yield and income advantage plus its advantage for other characteristics over these hybrids will make it an important addition for most of the areas where these hybrids are grown.

TABLE 2

PIONEER HYBRID 3394 VS PIONEER HYBRIDS 3503, 3417, 3398, 3379, 3362, AND 3241; GARST HYBRID GR8532; AND WYFFELS WYF670 FROM 1990 STRIP TESTS

Brand	Product	Yield	Moist	Income/ Acre	Pop K/Acre	Stand (%)	Roots (%)	Test Wt
PIONEER	3394	167.8	19.4	402.22	23.2	92	98	56.7
PIONEER	3503	154.6	19.1	371.57	22.9	87	96	58.5
Advantage		13.2	-0.3	30.65	0.3	5	2	-1.8
Number of Comparisons		159	159	159	85	68	40	133
Percent Wins		87	40	83	54	45	5	6
Probability of Difference		99	99	99	85	99	65	99
PIONEER	3394	169.3	19.4	405.74	23.6	91	98	56.7
PIONEER	3417	160.1	18.8	385.83	23.4	88	98	56.3
Advantage		9.2	-0.6	19.91	0.2	3	0	0.4
Number of Comparisons		245	245	245	145	116	87	200
Percent Wins		75	28	72	46	55	5	56
Probability of Difference		99	99	99	84	99	2	99
PIONEER	3394	162.6	17.7	395.41	22.1	96	100	57.3
PIONEER	2398	164.4	18.2	399.59	21.9	98	100	57.1
Advantage		-2.8	0.5	-4.18	0.2	-2	0	0.2
Number of Comparisons		37	37	37	20	11	7	36
Percent Wins		32	64	40	45	18	0	44
Probability of Difference		92	97	68	20	63	0	67
PIONEER	3394	167.1	19.4	400.61	23.6	92	98	56.9
PIONEER	3379	155.0	19.4	371.71	23.7	93	98	56.5
Advantage		12.1	0.0	28.90	-0.1	-1	0	0.4
Number of Comparisons		343	343	343	217	172	122	282
Percent Wins		85	45	86	41	37	11	52
Probability of Difference		99	41	99	44	89	3	99
PIONEER	3394	167.6	18.8	404.01	23.3	90	99	57.0
PIONEER	3362	153.6	18.4	371.89	22.5	88	99	56.4
Advantage		14.0	-0.4	32.12	0.8	2	0	0.6
Number of Comparisons		191	191	191	109	90	75	150
Percent Wins		91	37	92	59	54	2	61
Probability of Difference		99	99	99	99	97	35	99
PIONEER	3394	170.4	19.7	407.79	24.3	95	98	57.1
PIONEER	3241	161.8	22.7	375.08	23.8	94	95	56.0
Advantage		8.6	3.0	32.71	0.5	1	3	1.1
Number of Comparisons		130	130	130	95	61	43	105
Percent Wins		73	96	85	53	47	15	71
Probability of Difference		99	99	99	93	54	77	99
PIONEER	3394	136.4	25.9	308.72	23.2	90	100	55.5
GARST	8532	113.3	25.5	258.72	24.2	77	100	55.0
Advantage		23.1	-0.4	50.00	-1.0	13	0	0.5
Number of Comparisons		3	3	3	2	2	2	2
Percent Wins		66	66	66	0	50	0	50
Probability of Difference		58	28	60	50	36	0	50
PIONEER	3394	168.2	22.0	392.84	20.5	95	100	50.0
WYFFELS	W670	149.9	23.7	344.68	25.0	92	100	55.0
Advantage		18.3	1.7	48.16	-4.5	3	0	-5.0
Number of Comparisons		6	6	6	1	1	1	1
Percent Wins		83	83	83	0	100	0	0
Probability of Difference		97	84	97	0	0	0	0
PIONEER	3394	167.9	19.3	402.93	23.6	92	98	56.9
WEIGHTED AVG		156.8	19.5	375.69	23.3	91	98	56.7
Advantage		11.1	0.2	27.24	0.3	1	0	0.2
Number of Comparisons		1114	1114	1114	674	521	379	909
Percent Wins		81	46	82	48	46	7	48
Probability of Difference		99	99	99	99	99	81	99

NOTE. The probability values are useful in analyzing if there is a "real" difference in the genetic potential of the products involved. High values are desirable, with 95% considered significant for real differences.

EXAMPLE 3

Comparison of Key Characteristics for Hybrid 3394

Characteristics of Pioneer Brand Hybrid 3394 are compared to Pioneer Brand Hybrids 3503, 3417, 3398, 3379, 3362, and 3241; Garst Brand Hybrid GR8532; and Wyffel Brand Hybrids WYF627 and WYF670 in Table 3. The ratings given for most of the traits are on a 1–9 basis. In these cases 9 would be outstanding, while 1 would be poor for the given characteristics. These values are based on performance of a given hybrid relative to other Pioneer commercial, precommercial, and competitive hybrids that are grown in research and strip test trials. The traits characterized in Table 3 were defined previously and the ratings utilized not only research data but experience trained corn researchers had in the field as well as sales experience with the hybrids in strip test and the field. These scores reflect the hybrid's relative performance to other hybrids for the characteristics listed. The table shows 3394 yielded well for its maturity, yielding equally well at both high and low plant population densities. 3394 has very good stay green and seedling vigor

compared to the other hybrids. 3394 is shorter compared to the other hybrids except Pioneer Hybrid 3241. 3394 has overall excellent yield and agronomic characteristics which should make it an important hybrid in its area of adaptation.

TABLE 3

HYBRID PATENT COMPARISONS--CHARACTERISTICS
Pioneer Hybrid 3394 vs Pioneer Hybrids 3503, 3417, 3398, 3379, 3362, and 3241;
Garst Hybrid 8532; and Wyffel Hybrids WYF627 and WYF670

HYBRID	SILK_CRM	GDU_SILK	BL._CRM	GDU_BL	CRM	YLD	H/POP	L/POP	D/D	S/L
3394	109	1442	110	2760	111	9	9	9	6	7
3503	107	1413	106	2698	109	8	8	7	5	4
3417	108	1423	110	2760	108	9	8	9	6	4
3398	108	1435	109	2756	111	9	8	9	5	6
3379	112	1473	116	2856	111	8	9	6	8	7
3362	111	1462	110	2767	111	8	9	6	6	5
3241	112	1478	113	2806	114	8	8	6	4	8
GR8532	105				113	8	8	6	3	4
WYF627	108	1435	108	2739	111	7	5	7	5	3
WYF670	106	1399	107	2714	113	7	8	6	3	4

HYBRID	R/L	STGR	D/T	T/WT	G/A	S/VIG	P/NT	E/NT	D/E	B/STK
3394	7	8	7	5	6	8	5	4	4	4
3503	6	6	7	8	6	6	3	3	6	5
3417	6	4	8	5	5	5	4	2	6	4
3398	6	3	8	5	7	5	4	3	6	6
3379	5	7	8	5	5	4	4	5	6	7
3362	7	6	9	4	4	4	4	3	6	8
3241	4	8	7	5	6	9	7	8	5	3
GR8532	7	5	8	5	4	5	2	1	5	7
WYF627	3	2	4	4	4	4	4	5	4	
WYF670	7	5	8	5	4	8	2	1	5	7

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity and understanding, it will be obvious that certain changes and modifications may be practiced within the scope of the invention, as limited only by the scope of the appended claims.

Deposits

Applicant has made a deposit of at least 2500 seeds of Hybrid Corn Line 3394 with the American Type Culture Collection (ATCC), Rockville, Md. 20852 USA. ATCC Deposit No. 97224. The seeds deposited with the ATCC on July 17, 1995 were taken from the deposit maintained by Pioneer Hi-Bred International, Inc., 700 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340 since prior to the filing date of this application. This deposit of the Hybrid Corn Line 3394 will be maintained in the ATCC depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the effective life of the patent, whichever is longer, and will be replaced if it becomes nonviable during that period. Additionally, Applicant has satisfied all the requirements of 37 C.F.R. §§1.801 - 1.809, including providing an indication of the viability of the sample. Applicant imposes no restrictions on the availability of the deposited material from the ATCC; however, Applicant has no authority to waive any restrictions imposed by law on the transfer of biological material or its transportation in commerce. Applicant does not waive any infringement of its rights granted under this patent.

What is claimed is:

1. A hybrid corn plant designated as 3394 and its parts, and having ATCC accession number 97224.

2. A tissue culture of regenerable cells of the plant of claim 1 wherein the plants regenerated from the culture have all the physiological and morphological characteristics of 3394.

3. A corn plant regenerated from the tissue culture of claim 2 and having all the physiological and morphological characteristics of hybrid 3394.

4. A tissue culture of a plant according to claim 2, wherein the tissue is selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silk, flowers, kernels, ears, cobs, husks, stalks, cells, and protoplasts thereof.

5. A hybrid corn plant having all the physiological and morphological characteristics of 3394, ATCC accession number 97224.

6. Seed produced by a hybrid corn plant designated as 3394, said hybrid corn plant having ATCC accession number 97224.

* * * * *

00064

U.S. Patent No. 5,506,367 (inbred corn line)

US005506367A

United States Patent [19]

Keaschall

[11] Patent Number: 5,506,367

[45] Date of Patent: Apr. 9, 1996

[54] **INBRED CORN LINE PHP38**

[75] Inventor: Joseph W. Keaschall, Sharpsville, Ind.

[73] Assignee: Pioneer Hi-Bred International, Inc., Des Moines, Iowa

[21] Appl. No.: 996,378

[22] Filed: Dec. 23, 1992

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 542,364, Jun. 20, 1990, abandoned.

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[58] Field of Search 800/200, 250, 800/DIG. 56; 47/58.03, 58.05; 435/172.2, 240.4, 240.85, 240.49

[56] **References Cited**

PUBLICATIONS

Phillips et al. (1988) Cell/Tissue Culture and In Vitro Manipulation: In corn & corn Improvement. Ed. Sprague et al. pp. 345–387.

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[57] **ABSTRACT**

According to the invention, there is provided an inbred corn line, designated PHP38. This invention thus relates to the plants and seeds of inbred corn line PHP38 and to methods for producing a corn plant produced by crossing the inbred line PHP38 with itself or with another corn plant. This invention further relates to hybrid corn seeds and plants produced by crossing the inbred line PHP38 with another corn line or plant and to crosses with related species.

6 Claims, No Drawings

INBRED CORN LINE PHP38

This is a continuation-in-part of application Ser. No. 07/542,364 filed on Jun. 20, 1990 now abandoned.

FIELD OF THE INVENTION

This invention is in the field of corn breeding, specifically relating to an inbred corn line designated PHP38.

BACKGROUND OF THE INVENTION

The goal of plant breeding is to combine in a single variety/hybrid various desirable traits. For field crops, these traits may include resistance to diseases and insects, tolerance to heat and drought, reducing the time to crop maturity, greater yield, and better agronomic quality. With mechanical harvesting of many crops, uniformity of plant characteristics such as germination and stand establishment, growth rate, maturity, and fruit size, is important.

Field crops are bred through techniques that take advantage of the plant's method of pollination. A plant is self-pollinated if pollen from one flower is transferred to the same or another flower of the same plant. A plant is cross-pollinated if the pollen comes from a flower on a different plant.

Plants that have been self-pollinated and selected for type for many generations become homozygous at almost all gene loci and produce a uniform population of true breeding progeny. A cross between two homozygous lines produce a uniform population of hybrid plants that may be heterozygous for many gene loci. A cross of two plants each heterozygous at a number of gene loci will produce a population of hybrid plants that differ genetically and will not be uniform.

Corn plants (*Zea mays* L.) can be bred by both self-pollination and cross-pollination techniques. Corn has separate male and female flowers on the same plant, located on the tassel and the ear, respectively. Natural pollination occurs in corn when wind blows pollen from the tassels to the silks that protrude from the tops of the incipient ears.

The development of corn hybrids requires the development of homozygous inbred lines, the crossing of these lines, and the evaluation of the crosses. Pedigree breeding and recurrent selection breeding methods are used to develop inbred lines from breeding populations. Breeding programs combine the genetic backgrounds from two or more inbred lines or various other broad-based sources into breeding pools from which new inbred lines are developed by selfing and selection of desired phenotypes. The new inbreds are crossed with other inbred lines and the hybrids from these crosses are evaluated to determine which of those have commercial potential.

Pedigree breeding starts with the crossing of two genotypes, each of which may have one or more desirable characteristics that is lacking in the other or which complement the other. If the two original parents do not provide all of the desired characteristics, other sources can be included in the breeding population. In the pedigree method, superior plants are selfed and selected in successive generations. In the succeeding generations the heterozygous condition gives way to homogeneous lines as a result of self-pollination and selection. Typically in the pedigree method of breeding five or more generations of selfing and selection is practiced: $F_1 \rightarrow F_2$; $F_2 \rightarrow F_3$; $F_3 \rightarrow F_4$; $F_4 \rightarrow F_5$, etc.

Backcrossing can be used to improve an inbred line. Backcrossing transfers a specific desirable trait from one inbred or source to an inbred that lacks that trait. This can be accomplished for example by first crossing a superior inbred (A) (recurrent parent) to a donor inbred (non-recurrent parent), which carries the appropriate gene(s) for the trait in question. The progeny of this cross is then mated back to the superior recurrent parent (A) followed by selection in the resultant progeny for the desired trait to be transferred from the non-recurrent parent. After five or more backcross generations with selection for the desired trait, the progeny will be heterozygous for loci controlling the characteristic being transferred, but will be like the superior parent for most or almost all other genes. The last backcross generation would be selfed to give pure breeding progeny for the gene(s) being transferred.

A single cross hybrid corn variety is the cross of two inbred lines, each of which has a genotype which complements the genotype of the other. The hybrid progeny of the first generation is designated F_1. In the development of hybrids only the F_1 hybrid plants are sought. Preferred F hybrids are more vigorous than their inbred parents. This hybrid vigor, or heterosis, can be manifested in many polygenic traits, including increased vegetative growth and increased yield.

The development of a hybrid corn variety involves three steps: (1) the selection of plants from various germplasm pools; (2) the selfing of the selected plants for several generations to produce a series of inbred lines, which, although different from each other, each breed true and are highly uniform; and (3) crossing the selected inbred lines with unrelated inbred lines to produce the hybrid progeny (F_1). During the inbreeding process in corn, the vigor of the lines decreases. Vigor is restored when two unrelated inbred lines are crossed to produce the hybrid progeny (F_1). An important consequence of the homozygosity and homogeneity of the inbred lines is that the hybrid between any two inbreds will always be the same. Once the inbreds that give a superior hybrid have been identified, the hybrid seed can be reproduced indefinitely as long as the homogeneity of the inbred parents is maintained.

A single cross hybrid is produced when two inbred lines are crossed to produce the F_1 progeny. A double cross hybrid is produced from four inbred lines crossed in pairs (A×B and C×D) and then the two F_1 hybrids are crossed again (A×B)×(C×D). Much of the hybrid vigor exhibited by F_1 hybrids is lost in the next generation (F_2). Consequently, seed from hybrid varieties is not used for planting stock.

Corn is an important and valuable field crop. Thus, a continuing goal of plant breeders is to develop high-yielding corn hybrids that are agronomically sound based on stable inbred lines. The reasons for this goal are obvious: to maximize the amount of grain produced with the inputs used and minimize susceptibility to environmental stresses. To accomplish this goal, the corn breeder must select and develop superior inbred parental lines for producing hybrids. This requires identification and selection of genetically unique individuals which in a segregating population occur as the result of a combination of crossover events plus the independent assortment of specific combinations of alleles at many gene loci which results in specific genotypes. Based on the number of segregating genes, the frequency of occurrence of an individual with a specific genotype is less than 1 in 10,000. Thus, even if the entire genotype of the parents has been characterized and the desired genotype is known, only a few if any individuals having the desired genotype may be found in a large F_2 or S_0 population.

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Typically, however, the genotype of neither the parents nor the desired genotype is known in any detail.

SUMMARY OF THE INVENTION

According to the invention, there is provided a novel inbred corn line, designated PHP38. This invention thus relates to the seeds of inbred corn line PHP38, to the plants of inbred corn line PHP38, and to methods for producing a corn plant produced by crossing the inbred line PHP38 with itself or another corn line. This invention further relates to hybrid corn seeds and plants produced by crossing the inbred line PHP38 with another corn line or a related species.

DEFINITIONS

In the description and examples that follow, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

ABS=absolute measurement and % MN is percentage of mean of the experiments in which inbread or hybrid was grown unless otherwise defined.

BAR PLT=BARREN PLANTS. This is the percent of plants per plot that were not barren (lack ears).

BRT STK=BRITTLE STALKS. This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR=YIELD (BUSHELS/ACRE). Actual yield of the grain at harvest adjusted to 15.5% moisture. ABS is in absolute terms and % MN is percent of the means for the experiments in which the inbred or hybrid was grown.

CLD TST=COLD TEST. This is the percentage of kernels that germinate under cold soil conditions.

COB SC=COB SCORE. The cob score is a rating of how well the grain is shelled off the cob and how badly the cob is broken up going through the combine. This is given as a 1 to 9 score with 9 being very good. A high score indicates that the grain shells off of the cob well, and the cob does not break.

DRP EAR=DROPPED EARS. This is a measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT=EAR HEIGHT. The ear height is a measure from the ground to the top developed ear node attachment and is measured in inches.

EAR SZ=EAR SIZE. A 1 to 9 visual rating of ear size. The higher the rating the larger the ear size.

EST CNT=EARLY STAND COUNT. This is a measure of the stand establishment in the spring and represents the number of plants that emerge on a per plot basis for the inbred or hybrid.

GDU SHD=GDU TO SHED. The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

$$GDU = \frac{(\text{Max. temp} + \text{Min. temp})}{2} - 50$$

The highest maximum temperature used is 86° F. and the lowest minimum temperature used is 50° F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SLK=GDU TO SILK. The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in GDU SHD definition.

GRN QUL=GRAIN QUALITY. This is a 1 to 9 rating for the general quality of the shelled grain as it is harvested based on such factors as the color of the harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality.

MST=HARVEST MOISTURE. The moisture is the actual percentage moisture of the grain at harvest.

PLT HT=PLANT HEIGHT. This is a measure of the height of the plant from the ground to the tip of the tassel in inches.

POL SC=POLLEN SCORE. A 1 to 9 visual rating indicating the amount of pollen shed. The higher the score the more pollen shed.

PRM=PREDICTED RM. This trait, predicted relative maturity (RM), is based on the harvest moisture of the grain. The relative maturity rating is based on a known set of checks and utilizes standard linear regression analyses and is referred to as the Minnesota Relative Maturity Rating System.

RT LDG=ROOT LODGING. Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

SCT GRN=SCATTER GRAIN. A 1 to 9 visual rating indicating the amount of scatter grain (lack of pollination or kernel abortion) on the ear. The higher the score the less scatter grain.

SDG VGR=SEEDLING VIGOR. This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor.

SEL IND=SELECTION INDEX. The selection index gives a single measure of the hybrid's worth based on information for up to five traits. A corn breeder may utilize his or her own set of traits for the selection index. One of the traits that is almost always included is yield. The selection index data presented in the tables represent the mean value averaged across testing stations.

STA GRN=STAY GREEN. Stay green is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK CNT=NUMBER OF PLANTS. This is the final stand or number of plants per plot.

STK LDG=STALK LODGING. This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

TAS BLS=TASSEL BLAST. A 1 to 9 visual rating was used to measure the degree of blasting (necrosis due to heat stress) of the tassel at time of flowering. A 1 would indicate a very high level of blasting at time of flowering, while a 9 would have no tassel blasting.

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TAS SZ=TASSEL SIZE. A 1 to 9 visual rating was used to indicate the relative size of the tassel. The higher the rating the larger the tassel.

TAS WT=TASSEL WEIGHT. This is the average weight of a tassel (grams) just prior to pollen shed.

TEX EAR=EAR TEXTURE. A 1 to 9 visual rating was used to indicate the relative hardness (smoothness of crown) of mature grain. A 1 would be very soft (extreme dent) while a 9 would be very hard (flinty or very smooth crown).

TILLER=TILLERS. A count of the number of tillers per plot that could possibly shed pollen was taken. Data is given as percentage of tillers: number of tillers per plot divided by number of plants per plot.

TST WT=TEST WEIGHT UNADJUSTED. The measure of the weight of the grain in pounds for a given volume (bushel).

TST WTA=TEST WEIGHT ADJUSTED. The measure of the weight of the grain in pounds for a given volume (bushel) adjusted for percent moisture.

YLD=YIELD. It is the same as BU ACR ABS.

YLD SC=YIELD SCORE. A 1 to 9 visual rating was used to give a relative rating for yield based on plot ear piles. The higher the rating the greater visual yield appearance.

MDM CPX=Maize Dwarf Mosaic Complex (MDMV= Maize Dwarf Mosaic Virus & MCDV=Maize Chlorotic Dwarf Virus): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

COM SMT=Common Smut (*Ustilago maydis*): Percentage of plants that did not have infection.

SLF BLT Southern Leaf Blight (*Bipolaris maydis, Helminthosporium maydis*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

NLF BLT=Northern Leaf Blight (*Exserohilum turcicum, H. turcicum*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

COM RST=Common Rust (*Puccinia sorghi*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

EYE SPT=Eyespot (*Kabatiella zeae*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

GLF SPT=Gray Leaf Spot (*Cercospora zeae-maydis*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

STW WLT=Stewart's Wilt (*Erwinia stewartii*): Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant.

HD SMT=Head Smut (*Sphaceiotheca reiliana*): Percentage of plants that did not have infection.

EAR MLD=General Ear Mold: Visual rating (1–9 score) where a "1" is very susceptible and a "9" is very resistant. This is based on overall rating for ear mold of mature ears without determining specific mold organism, and may not be predictive for a specific ear mold.

ECB DPE=Dropped ears due to European Corn Borer (*Ostrinia nubilalis*): Percentage of plants that did not drop ears under second brood corn borer infestation.

ECB 2SC=European Corn Borer Second Brood (*Ostrinia nubilalis*): Visual rating (1–9 score) of post flowering damage due to infestation by European Corn Borer. A "1" is very susceptible and a "9" is very resistant.

ECB 1LF=European Corn Borer First Brood (*Ostrinia nubilalis*): Visual rating (1–9 score) of pre-flowering leaf feeding by European Corn Borer. A "1" is very susceptible and a "9" is very resistant.

DETAILED DESCRIPTION OF THE INVENTION

Inbred corn line PHP38 is a yellow, dent corn inbred that provides an acceptable male or female parental line in crosses for producing first generation F1 corn hybrids. PHP38 is best adapted to the central and eastern regions of the united States. Hybrids of PHP38 also possess very good drought tolerance and stability of yield which makes them extremely well-adapted for the hot, arid growing areas of the Western United States. The inbred can be used to produce hybrids from approximately 111–126 relative maturity based on the Minnesota Relative Maturity Rating System for harvest moisture of grain. PHP38 should make a good female since it has acceptable yield, good early vigor, and good early stand establishment. PHP38 would also be acceptable as a male because of its pollen yield. The inbred in hybrid combination has excellent stay green and overall disease tolerance. PHP38 has excellent stalks and above average roots. PHP38 hybrids generally have very good grain quality and high test weight.

The inbred has shown uniformity and stability within the limits of environmental influence for all the traits as described in the Variety Description Information (Table 1) that follows. Most of the data in the Variety Description Information was collected at Johnston, Iowa. The inbred has been self-pollinated and ear-rowed a sufficient number of generations with careful attention paid to uniformity of plant type to ensure homozygousity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observation for uniformity. No variant traits have been observed or are expected in PHP38.

Inbred corn line PHP38, being substantially homozygous, can be reproduced by planting seeds of the line, growing the resulting corn plants under self-pollinating or sib-pollinating conditions with adequate isolation, and harvesting the resulting seed, using techniques familiar to the agricultural arts.

TABLE 1

VARIETY DESCRIPTION INFORMATION
INBRED = PHP38

Type: Dent	Region Best Adapted: Central & Eastern Corn Belt
A. Maturity: Average across maturity zones. Zone: 0	
Heat Unit Shed:	1480
Heat Unit Silk:	1500
No. Reps:	64

TABLE 1-continued

VARIETY DESCRIPTION INFORMATION
INBRED = PHP38

HEAT UNITS = $\frac{(\text{Max. Temp. (86° F.)} + \text{Min. Temp (50° F.)})^{*}}{2} - 50$

B. Plant Characteristics:	
Plant height (to tassel tip):	225 cm
Length of top ear internode:	12 cm
Number of ears per stalk:	Single
Ear height (to base of top ear):	82 cm
Number of tillers:	None
Cytoplasm type:	Normal
C. Leaf:	
Color:	(B14) Dark Green
Angle from Stalk:	<30 degrees
Marginal Waves:	(W9) Few
Number of Leaves (mature plants):	20
Sheath Pubescence:	(W22) Light
Longitudinal Creases:	(PA11) many
Length (Ear node leaf):	80 cm
Width (widest point, ear node leaf):	9 cm
D. Tassel:	
Number lateral branches:	8
Branch Angle from central spike:	>45 degrees
Pollen Shed:	Medium based on Pollen yield test (98% of experiment means)
Peduncle Length (top leaf to basal branches):	22 cm
Anther Color:	Red
Glume Color:	Green
E. Ear (Husked Ear Data Except When Stated Otherwise):	
Length:	16 cm
Weight:	121 gm
Mid-point Diameter:	45 mm
Silk Color:	Yellow
Husk Extension (Harvest stage):	(>10 cm) Very long
Husk Leaf:	(8–15 cm) Medium
Taper of Ear:	Average
Position of Shank (dry husks):	Pendent
Kernal Rows:	Straight, Distinct Number = 16
Husk Color (fresh):	Light green
Husk Color (dry):	Buff
Shank Length:	13 cm
Shank (No. of internodes):	8
F. Kernel (Dried):	
Size (from ear mid-point)	
Length:	11 mm
Width:	8 mm
Thick:	6 mm
Shape Grade (% rounds):	40–60 (59% medium round based on Parent Test Data)
Pericarp Color:	Colorless
Aleurone Color:	Homozygous yellow
Endosperm Color:	Yellow
Endosperm Type:	Normal starch
Gm Wt/100 Seeds (unsized):	30 gm
G. Cob:	
Diameter at mid-point:	29 mm
Strength:	Strong
Color:	White
H. Diseases:	
Corn Lethal Necrosis (MCMV = Maize Chlorotic Mottle Virus and MDMV = Maize Dwarf Mosaic Virus):	Resistant
Maize Dwarf mosaic Complex (MDMV & MCDV = Maize Chlorotic Dwarf Virus):	Susceptible
Anthracnose Stalk Rot (*C. graminicola*):	Resistant
S. Leaf Blight (*H. maydis*):	Resistant
N. Leaf Blight (*H. turcicum*):	Intermediate
Carbonum Leaf Blight (*H. carbonum*):	Resistant
Eye Spot (*K. zeae*):	Intermediate
Gray Leaf Spot (*C. zeae*):	Susceptible

TABLE 1-continued

VARIETY DESCRIPTION INFORMATION
INBRED = PHP38

Stewart's Wilt (*E. stewartii*):	Resistant
Goss's Wilt (*C. nebraskense*):	Resistant
Common Smut (*U. maydis*):	Intermediate
Head Smut (*S. reiliana*):	Highly Resistant
Fusarium Ear Mold (*F. moniliforme*):	Resistant
1. Insects:	
European Corn Borer-1 Leaf Damage (Predowering):	Susceptible
European Corn Borer-2 (Post-flowering):	Intermediate
The above descriptions are based on a scale of 1-9, 1 being highly susceptible, 9 being highly resistant.	
S (Susceptible):	Would generally represent a score of 1-3.
I (Intermediate):	Would generally represent a score of 4-5.
R (Resistant):	Would generally represent a score of 6-7.
H (Highly Resistant):	Would generally represent a score of 8-9. Highly resistant does not imply the inbred is immune.
2. Variety Most Closely Resembling:	
Character	Inbred
Maturity	PHK29
Usage	PHG39

*If maximum is greater than 86 degrees fahrenheit, then 86 is used and if minimum is less than 50, then 50 is used. Heat units accumulated daily and can not be less than 0.

Data for Items B, C, D, E, F, and G is based primarily on a maximum of two reps from Johnston, Iowa grown in 1988, plus description information from the maintaining station.

ELECTROPHORESIS RESULTS

Isozyme Genotypes for PHP38

Isozyme data were generated for inbred corn line PHP38 according to the procedures described in Stuber, C. W., Wendel, J. F., Goodman, M. M., and Smith, J. S. C., "Techniques and Scoring Procedures for Starch Gel Electrophoresis of Enzymes from Maize (*Zea mays* L.)", Technical Bulletin No. 286, North Carolina Agricultural Research Service, North Carolina State University, Raleigh, N.C. (1988).

The data in Table 2 compares PHP38 with its parents PHG39 and PHK29.

TABLE 2

ELECTROPHORESIS RESULTS FOR PHP38 AND ITS PARENTS PHG39 AND PHK29

		PARENTS	
Loci	PHP38	PHG39	PHK29
ACP1	4	4	4
ADH1	4	4	4
CAT3	9	9	9
DIA1	8	8	12
GOT1	4	4	4
GOT2	2	2	4
GOT3	4	4	4
IDH1	4	4	4
IDH2	6	6	4
MDH1	6	6	6
MDH2	6	6	3.5
MDH3	16	16	16
MDH4	12	12	12
MDH5	12	12	12
MMM	4	4	4
PGM1	9	9	9
PGM2	4	4	4

TABLE 2-continued

ELECTROPHORESIS RESULTS FOR PHP38 AND ITS PARENTS PHG39 AND PHK29

		PARENTS	
Loci	PHP38	PHG39	PHK29
PGD1	2	2	3.8
PGD2	5	5	5
PH1	4	4	4

INDUSTRIAL APPLICABILITY

This invention also is directed to methods for producing a corn plant by crossing a first parent corn plant with a second parent corn plant wherein the first or second parent corn plant is an inbred corn plant from the line PHP38. Further, both first and second parent corn plants can come from the inbred corn line PHP38. Thus, any such methods using the inbred corn line PHP38 are part of this invention: selfing, backcrosses, hybrid production, crosses to populations, and the like. All plants produced using inbred corn line PHP38 as a parent are within the scope of this invention. Advantageously, the inbred corn line is used in crosses with other, different, corn inbreds to produce first generation (F_1) corn hybrid seeds and plants with superior characteristics.

As used herein, the terms "plant and plant parts" include plant cells, plant protoplasts, plant cell tissue culture from which corn plants can be regenerated, plant calli, plant clumps, and plant cells that are intact in plants or parts of plants, such as embryos, pollen, flowers, kernels, ears, cobs, leaves, husks, stalks, roots, root tips, anthers, silk and the like.

Tissue culture of corn is described in European Patent Application, publication 160,390, incorporated herein by reference. Corn tissue culture procedures are also described in Green and Rhodes, "Plant Regeneration in Tissue Culture of Maize," *Maize for Biological Research* (Plant Molecular Biology Association, Charlottsville, Va. 1982, at 367-372).

Thus, another aspect of this invention is to provide cells which upon growth and differentiation produce the inbred line PHP38.

The utility of inbred line PHP38 also extends to crosses with other species. Commonly, suitable species will be of the family Graminaceae, and especially of the genera Zea, Tripsacum, Coix, Schlerachne, Polytoca, Chionachne, and Trilobachne, of the tribe Maydeae. Of these, Zea and Tripsacum, are most preferred. Potentially suitable for crosses with PHP38 may be the various varieties of grain sorghum, *Sorghum bicolor* (L.) Moench.

Corn is used as human food, livestock feed, and as raw material in industry. The food uses of corn, in addition to human consumption of corn kernels, include both products of dry- and wet-milling industries. The principal products of corn dry milling are grits, meal and flour. The corn wet-milling industry can provide corn starch, corn syrups, and dextrose for food use. Corn oil is recovered from corn germ, which is a by-product of both dry- and wet-milling industries.

Corn, including both grain and non-grain portions of the plant, is also used extensively as livestock feed, primarily for beef cattle, dairy cattle, hogs, and poultry.

Industrial uses of corn are mainly from corn starch from the wet-milling industry and corn flour from the dry-milling industry. The industrial applications of corn starch and flour are based on functional properties, such as viscosity, film formation, adhesive properties, and ability to suspend particles. The corn starch and flour have application in the paper and textile industries. Other industrial uses include applications in adhesives, building materials, foundry binders, laundry starches, explosives, oil-well muds, and other mining applications.

Plant parts other than the grain of corn are also used in industry. Stalks and husks are made into paper and wallboard and cobs are used for fuel and to make charcoal.

The seed of inbred corn line PHP38, the plant produced from the inbred seed, the hybrid corn plant produced from the crossing of the inbred, hybrid seed, and various parts of the hybrid corn plant can be utilized for human food, livestock feed, and as a raw material in industry.

EXAMPLE

INBRED AND HYBRID PERFORMANCE OF PHP38

In the examples that follow the traits and characteristics of inbred corn line PHP38 are given as a line in comparison with its parents and in hybrid combination. The data collected on inbred corn line PHP38 is presented for the key characteristics and traits.

The results in Table 3A compare PHP38 to its PHG39 parent. The results show that PHP38 is significantly higher yielding and has lower grain moisture at maturity than PHG39. PHP38 flowers (GDU SHD and GDU SLK) earlier than PHG39 . PHP38 is shorter with lower ear placement than PHG39 and has significantly fewer barren plants. PHP38 has better seedling vigor, lower early stand establishment and cold tolerance than PHG39 . PHP38 has a higher test weight and scatter grain score than PHG39. In the areas of disease and insect resistance, PHP38 has better agronomic traits, ear mold, Northern leaf blight, and Stewart's wilt resistance but is more susceptible to first brood European corn borer than PHG39.

Table 3B compares PHP38 with inbred PHK29. PHK29 is the other parent of PHP38. PHP38 is lower yielding but has higher test weight than PHK29. PHP38 is shorter, has lower ear placement, and has fewer barren plants than PHK29. The seedling vigor and early stand establishment of PHP38 is better than PHK29 but has fewer kernels germinate under cold soil conditions. PHP38 flowers (GDU SHD and GDU SLK) earlier than PHK29. Stalk lodging, brittle stalk, and Northern and Southern leaf blight resistance is greater for PHP38 but PHP38 is more susceptible to first brood corn borer than PHK29.

Tables 4-9 compare PHP38 hybrids to Pioneer Brand hybrids 3362, 3467, 3540, 3569, 3379, and 3344, respectively. Each hybrid has a parent in common with the PHP38 hybrid other than PHP38. The hybrids are adapted to much of the same area as the PHP38 hybrids. Table 4 compares a PHP38 hybrid with 3362. The PHP38 hybrid yields significantly more bushels per acre and has a higher test weight than 3362. The PHP38 hybrid has better seedling vigor, is shorter, and ear placement is lower than 3362. Stalk lodging resistance is better and the stay green score of the PHP38 hybrid is higher than 3362.

The results of Table 5, comparing the PHP38 hybrid with 3467, show a number of agronomic differences. The PHP38 hybrid yields less, is taller, and has higher ear placement than 3467. The stalk and root lodging resistance of the PHP38 hybrid is better than 3467.

Table 6 shows that the PHP38 hybrid yields more, has higher test weight, and flowers earlier (GDU SHD) than 3540. Root lodging resistance and the stay green score is lower for the PHP38 hybrid and it has more dropped ears than 3540.

Table 7 shows the results between a PHP38 hybrid and 3569. The PHP38 hybrid is slightly higher yielding, has significantly higher test weight, and more grain moisture at maturity than 3569. The PHP38 hybrid and 3569 have similar plant and ear height but the PHP38 hybrid flowers (GDU SHD) slightly earlier than 3569. Stay green and grain quality are significantly better for the PHP38 hybrid than 3569. Stalk lodging resistance is significantly better for the PHP38 hybrid but it is more prone to root lodging than 3569, and the PHP38 hybrid also shows the potential for ear droppage.

The results in Table 8 show the PHP38 hybrid is significantly lower yielding, has significantly higher test weight, and has significantly more grain harvest moisture than 3379. The PHP38 hybrid is shorter, has slightly lower ear placement, and flowers (GDU SHD) similarly compared to 3379. The PHP38 hybrid has better seedling vigor but a lower early stand than 3379. Stay green and stalk lodging resistance are significantly better for the PHP38 hybrid but root lodging resistance is similar compared to 3379.

Table 9 compares a PHP38 hybrid with 3344. The PHP38 hybrid yields slightly more, has higher test weight, and similar grain moisture at maturity compared to 3344. The PHP38 hybrid and 3344 have similar plant and ear height and flower (GDU SHD) similarly. The PHP38 hybrid has significantly better stay green and seedling vigor than 3344. The PHP38 hybrid has better stalks but is slightly more prone to root lodging than 3344, and the PHP38 hybrid also shows the tendency to drop ears. These results show that PHP38 hybrids offer significant advantage over commercial products that are sold for yield and other important agronomic traits.

TABLE 3A

PAIRED INBRED COMPARISON DATA
VARIETY #1 - PHP38
VARIETY #2 - PHO39

YEAR	REGION	VAR #	BU ACR ABS	BU ACR % MN	YLD SC ABS	MST ABS	EAR SZ ABS	BAR PLT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	CLD TST ABS
TOTAL SUM		1	62.5	103	5.8	21.6	5.5	86.3	73.5	29.1	6.8	42.2	75.0
		2	44.5	70	4.7	22.0	6.1	72.4	79.1	33.0	6.1	43.5	94.5
		LOCS	38	38	19	38	13	15	25	25	44	60	2
		DIFF	18.0	33	1.1	0.3	0.5	13.9	5.6	3.9	0.7	1.3	19.5
		PROB	.0009	.0009	.018+	.253	.089*	.041+	.0009	.0009	.0026	.0090	.081*

YEAR	REGION	VAR #	CLD TST % MN	DRP EAR ABS	TIL LER ABS	GDU SHD ABS	GDU SLK ABS	POL SC ABS	TAS BLS ABS	TAS SZ ABS	TEX EAR ABS	TST WT ABS	GRN QUL ABS	SCT GRN ABS
TOTAL SUM		1	93	99.4	1.1	147.1	148.9	5.0	9.0	5.5	6.9	58.1	7.1	5.9
		2	117	99.7	1.5	154.8	157.2	5.5	7.0	5.8	6.3	56.5	7.0	4.7
		LOCS	2	25	19	37	47	15	1	24	10	38	30	15
		DIFF	24	0.3	0.4	7.7	8.4	0.3	2.0	0.3	0.6	1.6	0.2	1.1
		PROB	.080*	.279	.587	.0009	.0009	.262		.139	.239	.0009	.517	.0029

YEAR	REGION	VAR #	STA GRN ABS	STK LDG ABS	KT LDG ABS	BKT STK ABS	EAR MLD ABS	MLF BLT ABS	SLF BLT ABS	STW WLT ABS	ECB DPE ABS	ECB ILF ABS	ECB 2SC ABS
TOTAL SUM		1	6.5	98.3	94.7	98.0	7.4	5.0	7.0	7.0	100.0	3.8	5.8
		2	6.6	97.5	89.2	99.0	6.6	4.0	8.0	4.0	99.6	4.4	5.3
		LOCS	35	31	16	4	17	1	1	2	2	22	18
		DIFF	0.1	0.8	5.5	1.0	0.8	1.0	1.0	3.0	0.4	0.5	0.5
		PROB	.771	.127	.027+	.391	.114			.374	.500	.056*	.446

* = 10% SIG
+ = 5% SIG
@ = 1% SIG

TABLE 3B

PAIRED INBRED COMPARISON DATA
VARIETY #1 - PHP38
VARIETY #2 - PHO29

YEAR	REGION	VAR #	BU ACR ABS	BU ACR % MN	YLD SC ABS	MST ABS	EAR SZ ABS	BAR PLT ABS	PLT HT ABS	EAR HT ABS	SDG VGR ABS	EST CNT ABS	CLD TST ABS	CLD TST % MN
TOTAL SUM		1	65.1	103	5.6	23.2	5.4	87.2	76.8	30.3	6.5	37.9	75.0	93
		2	76.6	121	5.8	23.2	5.5	85.7	80.3	32.9	5.5	37.0	80.0	99
		LOCS	52	52	23	52	14	16	34	34	43	80	2	2
		DIFF	11.5	18	0.2	0.0	0.1	1.5	3.5	2.6	1.0	1.0	5.0	6
		PROB	.0009	.0009	.686	.878	.612	.651	.0048	.0068	.0009	.090*	.344	.344

YEAR	REGION	VAR #	DRP EAR ABS	TIL LER ABS	GDU SHD ABS	GDU SLK ABS	POL SC ABS	TAS BLS ABS	TAS SZ ABS	TEX EAR ABS	TST WT ABS	GRN QUL ABS	SCT GRN ABS	STA GRN ABS
TOTAL SUM		1	99.6	0.9	146.8	148.5	5.2	9.0	5.4	7.1	57.5	6.6	5.9	6.6
		2	99.7	4.7	148.9	152.1	5.7	9.0	5.3	6.1	56.9	6.9	6.6	6.5
		LOCS	33	21	72	58	19	1	31	12	52	42	18	39
		DIFF	0.2	3.8	2.1	3.6	0.5	0.0	0.2	1.0	0.6	0.3	0.6	0.1
		PROB	.308	.073*	.0009	.0009	.216		.567	.0048	.0029	.124	.119	.795

YEAR	REGION	VAR #	STK LDG ABS	KT LDG ABS	BKT STK ABS	LOM RST ABS	EAR MLD ABS	GLF SPT ABS	MLF BLT ABS	SLF BLT ABS	STW WLT ABS	ECB DPE ABS	ECB ILF ABS	ECB 2SC ABS
TOTAL SUM		1	97.7	95.9	98.9	7.0	7.6	2.5	5.0	7.0	7.0	100.0	3.9	6.0
		2	90.8	98.3	96.1	7.0	7.4	3.2	3.0	3.0	8.0	100.0	4.4	5.5
		LOCS	42	20	7	1	20	7	1	1	2	2	36	23
		DIFF	6.8	2.3	2.7	0.0	0.1	0.7	2.0	4.0	1.0	0.0	0.5	0.5
		PROB	.0019	.391	.150		.839	.035+			.0009	1.00	.036+	.448

* = 10% SIG

00072

TABLE 3B-continued

PAIRED INBRED COMPARISON DATA
VARIETY #1 - PHP38
VARIETY #2 - PHO29

+ = 5% SIG
@ = 1% SIG

TABLE 4

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3362
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3362

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	KT LDG ABS	BAR PLT ABS
TOTAL SUM		1	119	114	152.7	110	21.2	136.7	94.5	94.8	97.6
		2	118	105	144.7	104	20.9	137.2	92.8	95.3	98.5
		LOCS	15	15	75	75	75	23	66	40	21
		DIFF	1	9	8.0	6	0.3	0.5	1.7	0.5	0.8
		PROB	.160	.0009	.0009	.0009	.030+	.343	.011+	.490	.158

YEAR	REGION	VAR #	STA GRN ABS	TST WTA ABS	COB SC ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HR ABS	DRP EAR ABS	BKT STK ABS
TOTAL SUM		1	6.2	58.4	4.8	7.5	6.2	61.4	104.7	43.9	99.4	98.3
		2	5.6	57.2	4.5	6.7	5.4	60.8	105.4	45.8	99.5	98.9
		LOCS	39	74	6	29	42	45	31	31	48	8
		DIFF	0.6	1.3	0.3	0.8	0.9	0.6	0.7	1.9	0.1	0.6
		PROB	.027+	.0009	.745	.0019	.0009	.435	.250	.014+	.741	.165

* = 10% SIG
+ = 5% SIG
@ = 1% SIG

TABLE 5

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3467
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3467

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	KT LDG ABS
TOTAL SUM		1	117	91	116.5	86	16.6	130.3	92.2	92.8
		2	118	95	129.6	97	17.1	130.0	85.7	91.0
		LOCS	1	1	6	6	6	2	5	3
		DIFF	1	4	13.1	10	0.5	0.3	6.5	1.8
		PROB			.239	.203	.325	.874	.242	.707

YEAR	REGION	VAR #	BAR PLT ABS	STA GRN ABS	TST WTA ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HT ABS	DRP EAR ABS
TOTAL SUM		1	96.7	4.8	59.1	5.8	5.8	44.1	109.5	48.3	99.6
		2	96.8	3.0	59.8	5.8	4.3	56.4	107.0	43.0	99.0
		LOCS	1	2	6	6	2	4	2	2	5
		DIFF	0.1	1.8	0.6	0.0	0.5	12.3	2.5	5.3	0.6
		PROB		.395	.260	.000	.500	.189	.344	.050+	.309

* = 10% SIG
+ = 5% SIG
@ = 1% SIG

00073

TABLE 6

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3540
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3540

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	RT LDG ABS	BAR PLT ABS
TOTAL SUM		1	110	97	123.1	94	19.2	140.1	93.4	94.0	92.0
		2	110	94	120.2	93	19.3	142.4	93.1	97.0	87.5
		LOCS	8	8	38	38	43	13	39	10	2
		DIFF	0	3	2.9	1	0.1	2.2	0.3	3.0	4.5
		PROB	.848	.221	.156	.362	.536	.048+	.848	.332	.295

YEAR	REGION	VAR #	STA GRN ABS	TST WTA ABS	COB SC ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HT ABS	DRP EAR ABS
TOTAL SUM		1	5.0	58.6	7.2	7.5	6.3	53.0	86.0	39.6	98.9
		2	5.4	57.7	7.2	7.0	6.1	52.1	88.0	40.2	99.6
		LOCS	27	39	3	39	34	33	21	21	36
		DIFF	0.4	0.8	0.0	0.4	0.2	0.9	2.1	0.7	0.7
		PROB	.062*	.000#	.000	.038+	.553	.311	.014+	.241	.041+

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 7

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3569
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3569

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	RT LDG ABS	BAR PLT ABS
TOTAL SUM		1	109	102	137.9	99	18.8	139.3	95.0	95.0	91.0
		2	108	99	136.0	99	18.5	140.0	85.4	98.0	92.7
		LOCS	12	12	52	52	55	15	50	17	9
		DIFF	1	3	1.9	1	0.3	0.6	9.6	3.0	1.6
		PROB	.114	.366	.404	.748	.224+	.346	.000#	.201	.259

YEAR	REGION	VAR #	STA GRN ABS	TST WTA ABS	COB SC ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HT ABS	DRP EAR ABS
TOTAL SUM		1	4.9	58.9	7.1	7.5	6.7	59.5	91.8	42.2	98.7
		2	3.2	57.3	6.9	6.7	6.9	61.9	91.7	42.3	99.4
		LOCS	26	52	4	31	21	36	25	25	41
		DIFF	1.7	1.7	0.3	0.8	0.2	2.4	0.1	0.2	0.7
		PROB	.000#	.000#	.391	.008#	.455	.016+	.861	.825	.035+

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 8

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3379
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3379

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	RT LDG ABS	BAR PLT ABS
TOTAL SUM		1	124	102	140.5	99	21.0	142.3	98.2	94.8	94.1
		2	121	110	148.3	106	19.5	141.7	94.7	94.4	94.5
		LOCS	12	12	58	58	58	12	53	32	16
		DIFF	3	8	7.8	7	1.5	0.6	3.4	0.4	0.4

00074

TABLE 8-continued

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3379
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3379

YEAR	REGION	VAR #	STA GRN ABS	TST WTA ABS	COB SC ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HT ABS	DRP EAR ABS	RRT STK ABS
		PROB	.006#	.057*	.004#	.004#	.000#	.395	.013+	.437	.556	
TOTAL SUM		1	6.7	58.0	6.9	7.9	6.2	60.7	99.5	42.9	99.7	95.5
		2	6.1	57.8	7.5	7.8	5.6	64.0	102.3	43.5	99.6	95.3
		LOCS	34	58	4	25	24	40	27	27	32	6
		DIFF	0.5	0.3	0.5	0.1	0.5	3.4	2.8	0.6	0.0	0.1
		PROB	.057*	.035+	.435	.648	.049+	.000#	.000#	.331	.773	.874

* = 10% SIG
+ = 5% SIG
# = 1% SIG

TABLE 9

PHP38 HYBRID COMPARED TO PIONEER HYBRID 3344
VARIETY #1 - PHP38 HYBRID
VARIETY #2 - 3344

YEAR	REGION	VAR #	PRM	SEL IND	BU ACR ABS	BU ACR % MN	MST ABS	GDU SHD ABS	STK LDG ABS	RT LDG ABS	BAR PLT ABS
TOTAL SUM		1	123	106	145.3	104	20.8	145.5	96.0	92.1	91.5
		2	122	106	144.7	104	20.6	144.9	91.2	93.3	94.5
		LOCS	13	14	77	77	77	16	75	30	13
		DIFF	1	1	0.6	0	0.2	0.6	4.8	1.2	3.0
		PROB	.140	.728	.758	.786	.156	.273	.000#	.497	.260

YEAR	REGION	VAR #	STA GRN ABS	TST WTA ABS	COB SC ABS	GRN QUL ABS	SDG VGR ABS	EST CNT ABS	PLT HT ABS	EAR HT ABS	DRP EAR ABS
TOTAL SUM		1	5.8	57.2	5.4	6.9	6.6	61.5	100.4	42.3	99.0
		2	5.1	55.8	5.8	6.2	5.7	62.0	100.3	42.1	99.8
		LOCS	43	77	6	42	26	47	29	29	38
		DIFF	0.7	1.4	0.4	0.7	0.8	0.5	0.1	0.2	0.7
		PROB	.000#	.000#	.238	.004#	.002#	.345	.878	.000	.007#

* = 10% SIG
+ = 5% SIG
# = 1% SIG

Deposits

Applicants have made available to the public without restriction a deposit of at least 2500 seeds of inbred PHP38 with the American Type Culture Collection (ATCC), Rockville, Md. 20852 U.S.A., ATCC Deposit No. 75612. The seeds were deposited with the ATCC on Nov. 9, 1993, and are taken from the same deposit maintained by Pioneer Hi-Bred International Inc., 700 Capital Square, 400 Locust Street, Des Moines, Iowa 50309 since prior to the filing date of this application. This deposit of the Inbred Corn Line PHP38 will be maintained without restriction in the ATCC depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the effective life of the parent, whichever is longer, and will be replaced if it becomes nonviable during that period.

What is claimed is:

1. Inbred corn seed designated PHP38, having ATCC accession No. 75612.

2. A corn plant produced by the seed of claim 1.

3. A tissue culture of regenerable cells of the plant of claim 2.

4. Tissue culture according to claim 3 comprising regenerable cells of a plant part selected from meristematic tissue, anthers, leaves, embryos, pollen, and protoplasts thereof.

5. A corn plant regenerated from the regenerable cells of a tissue culture of claim 4, said plant possessing all the physiological and morphological characteristics of the inbred corn plant designated PHP38.

6. An inbred corn plant having all the physiological and morphological characteristics of the plant of claim 2.

* * * * *

00075

Tag/Label of Pioneer Hybrid Corn Seed Variety

PIONEER.
BRAND · SEED CORN

HYBRID: 34R06 KIND: FIELD CORN
LOT NO: C92HAL SIZE: PDR
ORIGIN: MI
GERM : 95% TESTED: DEC 1997
KERNELS/BAG: 80,000 92
CRM: 109 DAY

FERTILE CYTOPLASM

Pure Seed:	99.50%	Weed Seed:	None
Inert Matter:	0.50%	Other Crop Seed:	None
Noxious Weed Per Pound:			None

CAUTION: MAXIM®* (FLUDIOXONIL) & APRON®* (METALAXYL) TREATED
Do not use for food, feed or oil purposes. TREATED AT THE MANUFACTURERS' RECOMMENDED RATE. Keep out of reach of children.
DO NOT GRAZE UNTIL 30 DAYS AFTER PLANTING
*Trademarks of Ciba-Geigy Corporation.

HAZARD COMMUNICATION DATA

TREATED SEED CORN — CAUTION

Causes eye irritation. May cause skin irritation. Avoid contact with eyes, skin, or clothing. Harmful if inhaled or absorbed through the skin. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. If contact occurs, flush eyes with plenty of water for at least 15 minutes. Seek medical attention if eye or skin irritation persists. Seek prompt medical attention if swallowed. Note to physician: If ingested, induce emesis or lavage stomach. Treat symptomatically. For more information call Pioneer at 1-800-247-6803, extension 4166.

THE FOLLOWING PROVISIONS ARE PART OF THE TERMS OF PURCHASE OF THIS PRODUCT

Pioneer Hi-Bred International, Inc., (Pioneer) warrants that the seed purchased from it conforms to the descriptions on the label within tolerances, if any, established by law. THIS EXPRESS WARRANTY EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. Buyer's sole remedy shall be limited to the purchase price of the seed. Buyer agrees to these terms (and the more fully described limitation of warranty and rem provisions on the bag) as a binding part of the purchase terms.

Pioneer sales representatives (agents) have no ownership interest in the PIONEER® brand products which they distribute. Consequently, a sales representative has no ability to grant a security interest in these products to his or her creditors.

UNAUTHORIZED EXPORT IS PROHIBITED.

This hybrid is produced and licensed under one or more of the following issued U.S. patents:

4731499	5097083	5220114	5349119	5435564	5491295	5527986
4806652	5097094	5245125	5354941	5436390	5491387	5530180
4806649	5097095	5276265	5354942	5444178	5495065	5530184
4812599	5097096	5285004	5363014	5463173	5495066	5602317
4812600	5157206	5304719	5367109	5476999	5495069	5608138
5082991	5157208	5304720	5387754	5491286	5502272	5608140
5082992	5159132	5347079	5387755	5491289	5506367	5618987
5095174	5159133	5347080	5416254	5491290	5506368	5639946
5097092	5159134	5347081	5434346	and/or other patents pending.		

License is granted solely to produce grain and/or forage. For other licenses, contact Pioneer Hi-Bred International, Inc.

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524-489-022964
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SUPPLY MANAGEMENT • 6800 N.W. 62ND AVE. • P.O. Box 256 • JOHNSTON, IOWA 50131, U.S.A.

The purchase of these seeds includes a limited license under patent(s) US 5,500,365, US 5,352,605, US 5,759,142, US 5,322,938, US 5,164,316, US 5,196,525, US 5,424,412, US 5,424,200 (pending patent applications) to produce a single corn crop in the United States (or other applicable country). This license does not extend to the use of seed from such crop or the progeny thereof for propagation or seed multiplication. Furthermore, the use of such seed or the progeny thereof for propagation or seed multiplication or for production or development of a hybrid or different variety of seed is strictly prohibited.

00076

U.S. Patent No. 2,048,056

July 21, 1936. E. BOEHM 2,048,056

METHOD AND PRODUCT OF HYBRIDIZING PLANTS

Filed March 18, 1935

Fig. 1

Fig. 2

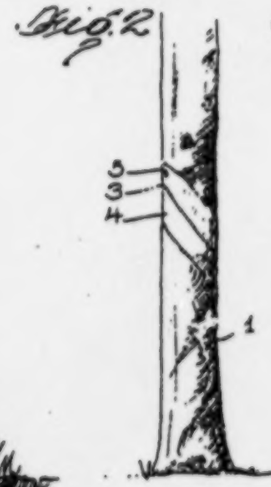

Fig. 3

Fig. 4

Fig. 5

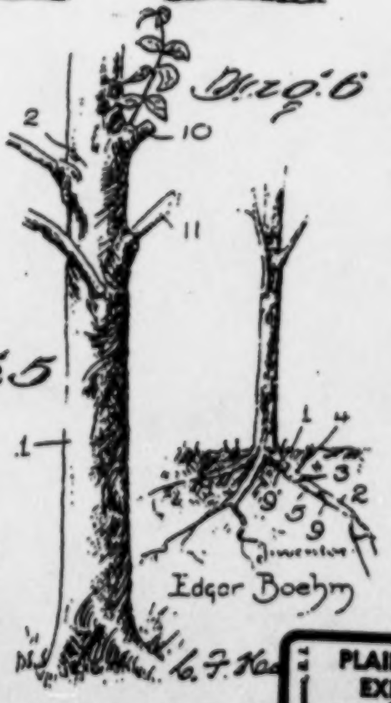

Fig. 6

Inventor
Edgar Boehm

6. F. Ke

PLAINTIFF'S EXHIBIT D

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00085

Patented July 21, 1936

2,048,056

UNITED STATES PATENT OFFICE

2,048,056

METHOD AND PRODUCT OF HYBRIDIZING PLANTS

Edgar Boehm, Monette, Ark.

Application March 18, 1935, Serial No. 11,738

6 Claims. (Cl. 47—6)

This invention relates to a new and improved method and product of hybridizing plants. It was developed in producing new varieties of fruits, but it can be practised on any plant growth which can be successfully grafted either in the growth above ground or in the roots, and it is my intention to claim it in its broadest sense. In this specification I describe the hybridization of fruit trees and fruit bushes merely as illustrative; but I do not wish to be restricted to such use because the process may be used in developing hybrid flowers in those bushes which can be grafted in any well-known way.

When the pollen of the flower of one plant is deposited upon the pistil of the flower of another plant, both plants being of the same genus but of different species of that genus, cross-fertilization frequently occurs, and the plant which grows from the seed thus fertilized will be a hybrid, partaking of the characteristics of both of the parents but not exactly like either of them.

In the usual method of hybridizing, the pollen of a flower of one species is transferred to and placed upon the pistil of a flower of a different species, both flowers being of the same genus. To do this successfully it is necessary to remove the stamens of the flower to be cross-fertilized, before they discharge any of their pollen. Then pollen from a flower of a different species of the same genus is brought to and placed upon the pistil which remains in the flower which is to be cross-fertilized.

There are many objections and disadvantages in trying to hybridize by this well known method. In the very beginning, some pollen may be shaken off, when cutting out the stamens, and drop upon the pistil of the same flower. In such a case, all further operations are useless and merely a waste of time, because the flower will thus be fertilized by its own pollen and no hybridization results.

Then, too, both flowers must be in exactly the same state of maturity; that is, the pollen of one flower must be in the proper condition to fertilize, and the pistil of the other flower must be in the proper condition to be fertilized. If either flower is not in the proper condition, cross-fertilizing will not take place. As the flowers of different species of the same genus do not always mature at exactly the same time, it happens that some of the crosses that, theoretically, appear to be most desirable hybridizations cannot be made by cross-pollenization.

Another, probably the greatest disadvantage is: at best, cross-pollenization can be practiced only during the very brief period of time, when the flowers of both species are in bloom, a period so brief in some it is a matter of only a few hours.

Then, too, it is necessary to wait for years for the seed to grow and the plant to mature and bear fruit before the result of the hybridization can be known, or whether there has been any hybridization at all.

I have invented a process of hybridization which overcomes all these objections and disadvantages and frequently produces hybrid fruit the same growing season my hybridization process has been employed.

The principal object and the principal advantage in employing my process is to be able to practice hybridizing leisurely, at any time during the entire year when budding and ordinary grafting may be successfully done on similar plants.

Another important object is to know positively that hybridization has taken place as soon as the plant begins to grow, without having to wait for the planting of the seed, the growing of the plant, the maturing of the plant and its fruiting, before it can be determined if hybridization has occurred.

Another object which is peculiar to and is exclusively derived from my method, only, is: the ability to control, in a great degree, the result of the hybridization to resemble one parent plant more than the other or to have it partake of the nature of both parent plants approximately equally.

Other objects and advantages will appear as the description of my process proceeds.

To illustrate the best way I have devised to practice my invention I have filed the accompanying sheet of drawings which is made a part of this specification, and in which

Figure 1 illustrates an ordinary graft of the style usually called a splice graft, the wax and the wrapping commonly used being omitted;

Fig. 2 shows how the graft of Fig. 1 looks after a period of growth;

Fig. 3 shows the scion cut off above the area of mixed protoplasmic growth and twigs growing from the area affected by the grafting;

Fig. 4 shows how bud sports originate;

Fig. 5 shows how the whole growing power of the tree may be directed to one or more auxiliary buds; and

Fig. 6 shows how my method can be applied to berry bushes or other pithy stalked growths.

My method is not dependent upon the style of grafting used. I have shown splice grafting merely as illustrative, but whip grafting, tongue grafting, cleft grafting, crown grafting, side grafting, or any other style of grafting will do and it may be practiced by budding and by root grafting.

As it is desirable to be able to determine, easily, the approximate area of the bark of the stock and the bark of the scion, contiguous to the point of union of the two parts of the graft, which has been modified by the growth after grafting, I prefer to use splice grafting, saddle grafting,

tongue grafting, or whip grafting, merely because I seem to be better able to locate the limits of the modified area when I use grafting of these types; however, the style of grafting preferred is immaterial to the success of the method and is determined almost wholly by the size and the condition of the stock and scion and the whim of the operator.

In the several views of the drawing and in the detailed specification wherever an element is designated by a reference character the particular character used will be found always applied to that element and to no other.

The stock is designated by 1, the scion by 2, and the line of union between these parts by 3. Whenever a graft makes a satisfactory growth, there is, after such period of growth, an area above and below the union, easily determinable, in which the nature of the protoplasm of growth is modified by the mixture of the sap of both the stock and the scion. This area of mixed protoplasmic effect is designated by 4 and 5 respectively, in Figs. 2 and 6. The power of the sap of the stock and the power of the sap of the scion to influence the hybridizing character of the growth near the union produced by grafting decrease as the distance from the line of union of the two parts increases. The protoplasm is approximately equally potent and mixed at the line of union of the stock and the scion.

After the complete union of the stock and the scion, sprouts from adventitious buds usually spring out of the area of mixed protoplasmic influence. However, to insure that sprouts do spring from the area of mixed protoplasmic growth, I cut off the scion just above the area modified by the mixture of the sap from the two parts, as indicated in Fig. 3, and to prevent bleeding of the severed tree, it is desirable to cover the stump with some water-proof material, such as grafting wax, paint, asphaltum, tar or the like.

Soon after the scion is cut off as indicated at 9, sprouts 6, 7, and 8 spring out from the area of mixed protoplasmic influence, because of the excess of sap checked in its upward flow by the waterproof material adhering to the cut surface of the stump.

Usually a greater number of twigs start growing from the area of mixed protoplasmic influence than should be permitted to remain, and, after selecting the twigs to be developed into the crown of the tree, all the others should be pruned off.

The horticulturist should excerise his own judgment as to the character of the fruit desired from the bearing tree; but I find it more interesting and prefer to preserve some limbs 6, which take out below the line of union, some limbs 7, which grow exactly over the line of union and some limbs 8, which grow out above the line of union. Such selected limbs should be spaced circumferentially about the trunk to insure a properly balanced crown to the tree.

The fruit borne by limbs 8 will partake more of the nature of the fruit borne by the limbs of the stock growing entirely below the area of influence of the mixed protoplasm; the fruit borne by limbs 7 will partake equally of the natures of the stock and the scion; and the fruit borne by limbs 8 will partake more of the character and nature of the scion.

Should it be thought desirable to have fruit from the scion uninfluenced by the characteristics of the stock, all it is necessary to do is to make the cut 9 above the area influenced by the mixed protoplasm of the section contiguous the graft and permit branches to grow from the scion above the area so influenced by the mixed protoplasm.

Thus it is possible to have five varieties of fruit produced by a single grafting operation.

Assuming that an apple stock and a pear scion are used, the five different varieties of fruit from one tree the result of a single grafting operation will be as follows: First, the unmodified apple of the stock; second, the hybrid fruit in which the apple predominates, borne by limbs 6; third, the hybrid fruit in which the characteristics of the apple of the stock and the pear of the scion are approximately equal, borne by limbs 7; fourth, the hybrid fruit in which the pear nature predominates, borne by limbs 8; and fifth, the fruit of the pear scion which is uninfluenced by the apple characteristics, borne by limbs which grow out of the scion above the area modified by the mixed protoplasm of the scion and the stock.

Axillary buds 13 and adventitious buds 12 may be forced to grow by removing the bark from branches growing near them in the area of mixed protoplasm as shown at 10 and 11, see Fig. 5.

The growth of branches springing from adventitious buds 12 and axillary buds 13 is greatly augmented by killing undesirable limbs by girdling them or by stripping the bark therefrom or the same increased growth may be secured by removing such limbs bodily and waterproofing the wounds made by such pruning.

In practicing my method upon blackberry bushes, raspberry bushes, and the like, the roots should be operated upon; because it is almost impossible to graft the tops. Fig. 6 illustrates the mode of operation upon such bushes, which have large soft pithy growth tops, not suitable for grafting. In this figure 1 indicates the root stock or growing plant, 2 a root scion, 3 the line of union, 4 and 5 the area of mixed protoplasmic growth, 9' indicates where the scion should be severed and 9'' shows where the united graft should be cut from the growing plant. Usually, during the time the root graft is making a proper union, numerous buds or sprouts appear upon the uniting roots; but if they do not or if they do not appear at places desired, I cut out the graft on the lines 9 and 9'' and plant the piece of united root in a hot-bed or other suitable place for forcing. After a short time, buds and sprouts appear throughout the whole length of the planted root. I then take up the root and separate it into parts having one or more sprouts on each part and then plant the parts which will produce numerous plants each of which is a hybrid of the two plants used in the root-grafting process.

Having fully explained my invention and the best way to practice it, what I claim is:

1. The method of hybridizing plants which consists in grafting a scion to a stock whereby there is produced in the vicinity of the line of union between the stock and the scion an area of growth wherein the protoplasm of the stock and the protoplasm of the scion are mixed and then preventing the growth of limbs from any other area than that influenced by the said mixture of protoplasm.

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2. The method of hybridizing plants which consists of inserting a bud-scion into a stock and then limiting future growth of the stock to branches springing from the immediate vicinity of the union of the bud-scion and the stock where the protoplasm of the new growth is derived from both the bud-scion and the stock, by gradually pruning away all other growth.

3. The method of hybridizing the apple and the pear which consists of grafting a scion of one of them to a stock of the other one of them and then preventing the growth of limbs from all other parts of the grafted tree excepting that area about the union of the stock and the scion wherein the newly formed protoplasms of the growing apple wood and the growing pear wood are mixed.

4. The method of hybridizing plants having pithy stems which consists in grafting a root-scion of one plant to the root-stock of a growing plant, removing the grafted section of the root-graft and planting it, then after sprouts have appeared upon the planted root-graft, severing such root-graft into portions each of which has one or more sprouts, and then planting the several portions whereby hybridized plants are produced.

5. The plant which is the product of the method of claim 1, characterized by varietal qualities differing from those of either the stock or the scion in a degree corresponding to the distance of origin of said limbs from the point of union of the stock and the scion.

6. The plant which is the product of the method of claim 1, characterized by varietal qualities differing from those of either the stock or the scion, the characteristics of the stock or the scion predominating in the preserved limbs in a degree corresponding to the distance of their origin on the stock or on the scion, respectively, from the line of union between the stock and the scion.

EDGAR BOEHM.

U.S. Patent No. 4,143,486

United States Patent [19]

Mann

[11] **4,143,486**

[45] **Mar. 13, 1979**

[54] **HYBRID WHEAT**

[75] Inventor: Shivcharan S. Mann, Fargo, N. Dak.

[73] Assignee: Research Corporation, New York, N.Y.

[21] Appl. No.: 833,444

[22] Filed: Sep. 15, 1977

[51] Int. Cl.[2] A01H 1/02

[52] U.S. Cl. 47/58; 47/DIG. 1

[58] Field of Search ..... 47/58, DIG. 1

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Primary Examiner—Robert E. Bagwill

Attorney, Agent, or Firm—Clyde F. Williar; S. Z. Szczepanski

[57] ABSTRACT

Seeds of alloplasmic wheat, which contain at least one specific nuclear gene (Ms) and a cytoplasm which interacts with the specific nuclear gene (Ms) or genes (Ms Ms) to maintain the plant fertile, are treated by a mutagenic agent and, if necessary selfed to obtain seeds having embryos that contain only mutated nuclear genes (ms ms). The seeds having embryos without at least one specific nuclear gene (Ms), produce plants which are male sterile (A-line). The A-line plants are pollinated with pollen from euplasmic or alloplasmic wheat (B-line), having chromosomes including specific nuclear genes (Ms Ms), to produce hybrid wheat seeds. The available A-line seeds may be multiplied by crossing the A-line plants with B-line plants to produce A-line seeds. The B-line seeds are produced by pollinating A-line plants with pollen from plants (D-line) which contain cytoplasm that maintains fertility of the plants irrespective of presence or absence of specific nuclear gene (Ms) and which contain specific nuclear genes (Ms Ms). The pollen from plants grown from the resulting seeds is used to pollinate D-line plants. The resulting seeds are planted and the plants are self pollinated producing seeds which have embryos containing Ms Ms, Ms ms, or ms ms genes and cytoplasm that maintains fertility of the plants regardless of the presence of specific nuclear gene (Ms) or genes (Ms Ms). The seeds having embryos with ms ms genes are selected as the B-line seeds.

25 Claims, 3 Drawing Figures

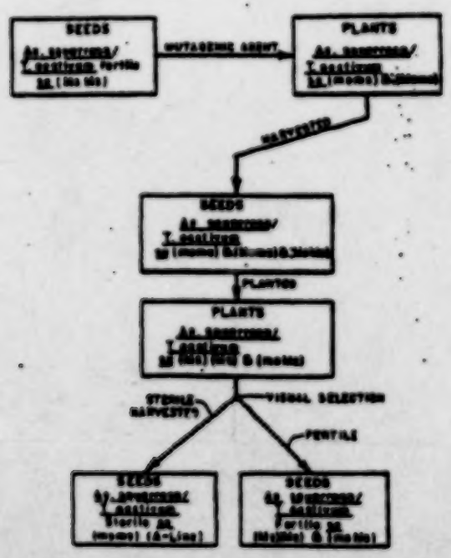

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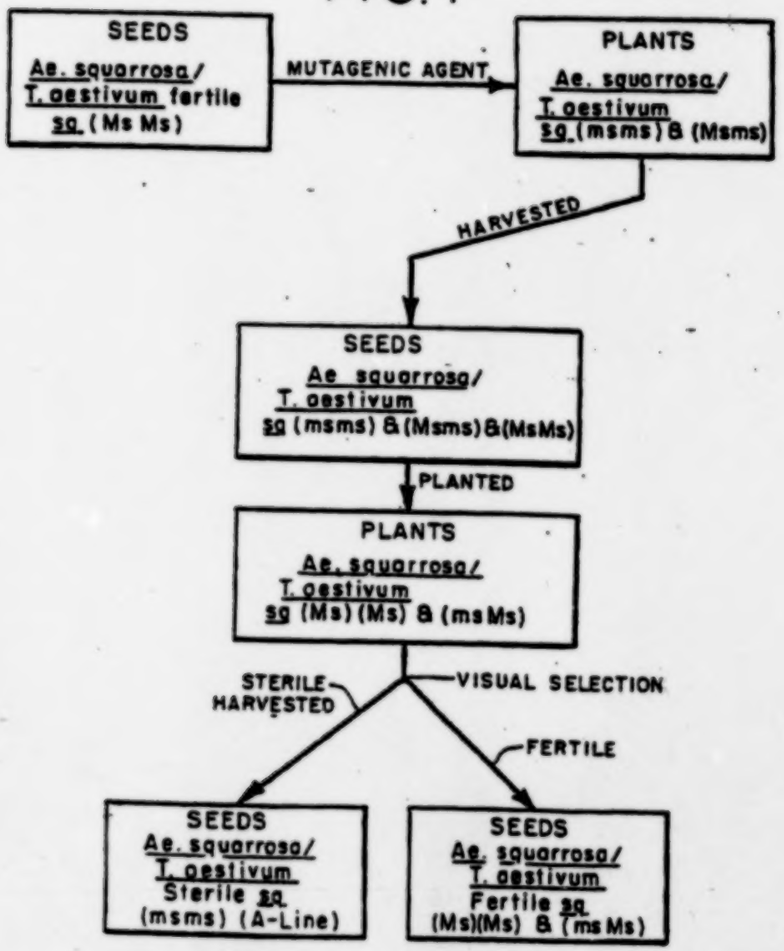
FIG. 1



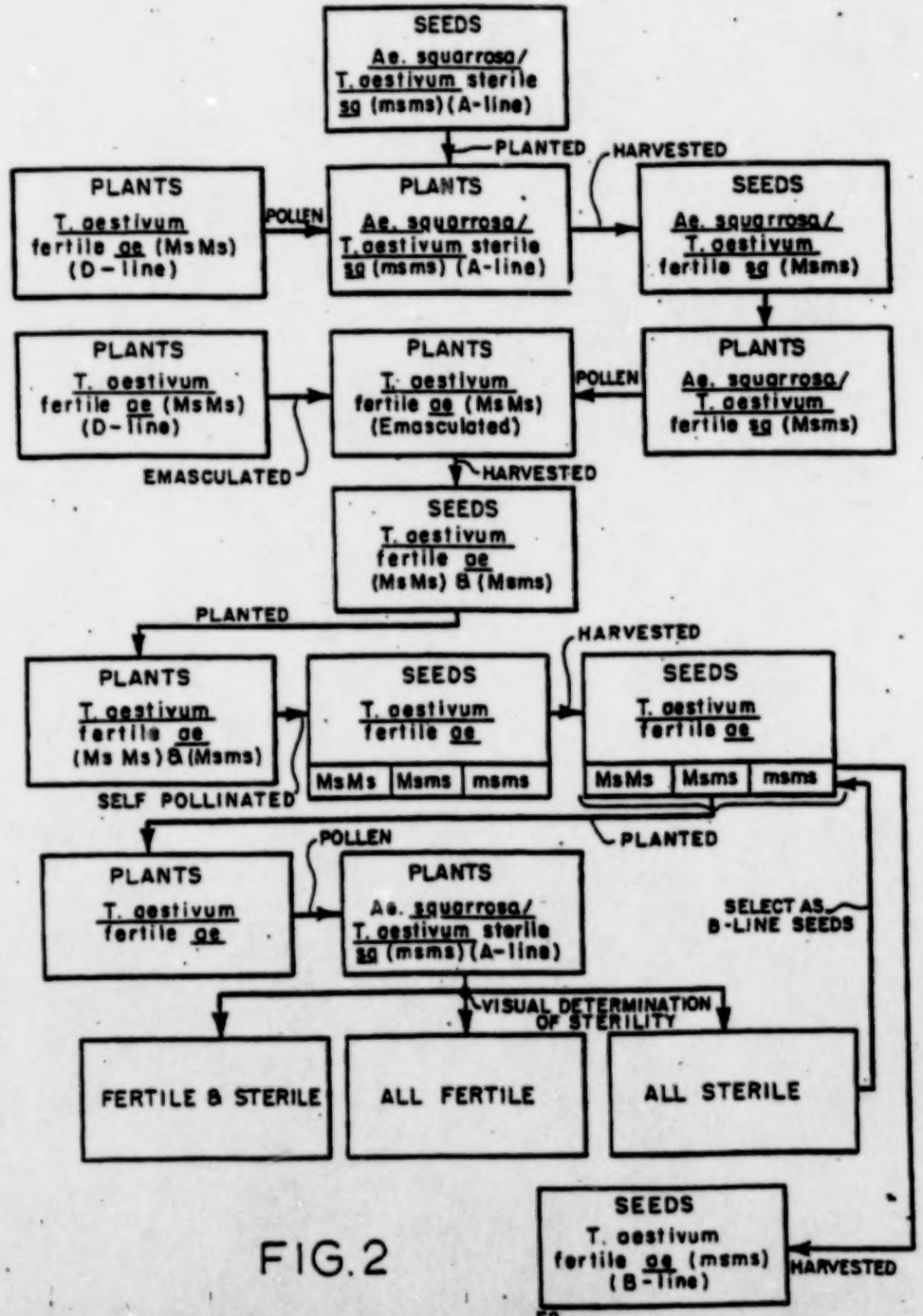


FIG. 2

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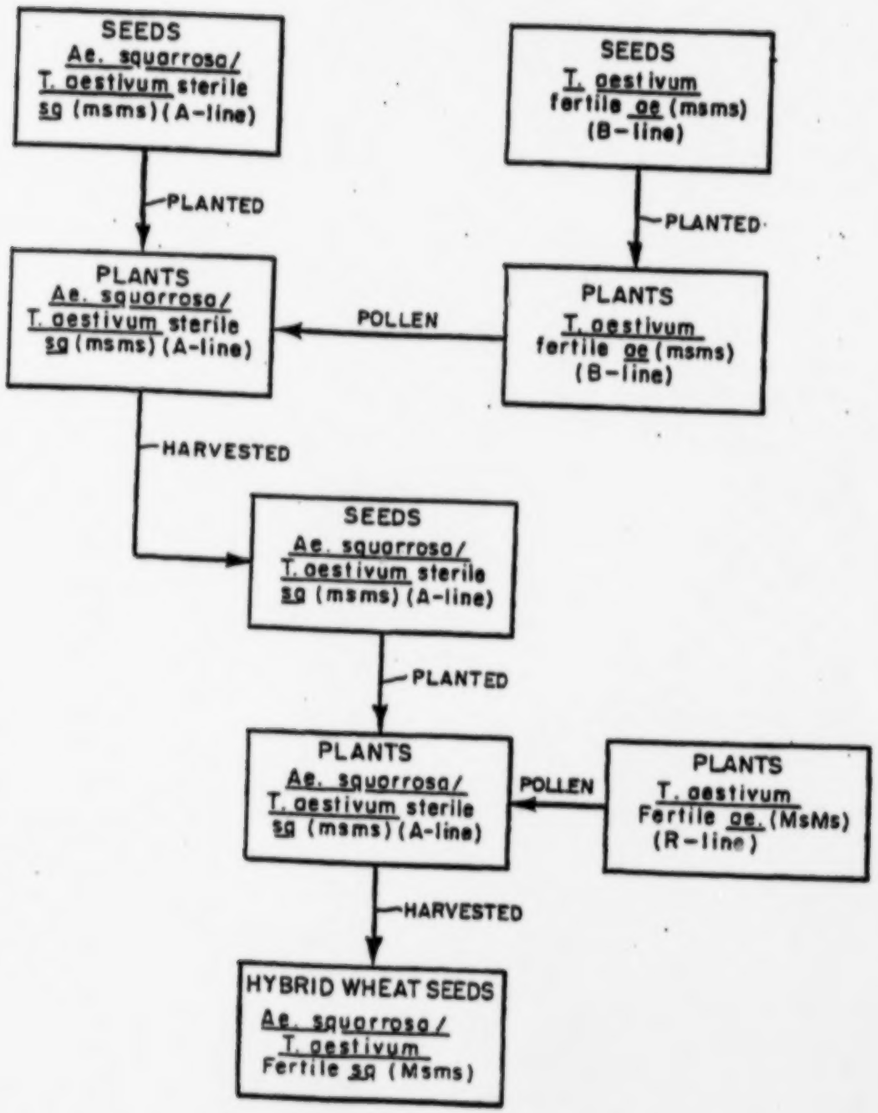
FIG. 3



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HYBRID WHEAT

BACKGROUND OF THE INVENTION

This invention relates to breeding of crop plants. In particular, it relates to producing hybrid wheat seeds on a commercial scale.

Controlled cross pollination of plants has been utilized by plant breeders for production of hybrid strains of plants which combine desirable qualities of the original parents. The desired first generation hybrid plants produced by controlled cross pollination have uniform qualities, including the size, height and genetic composition of plant products of economic importance. Since the progenies of the first generation hybrid plants have uneven physical characteristics and differ widely in genetic composition, in order to retain the advantages of a uniform, high quality hybrid crop, the farmer must be supplied with hybrid seeds each time he plants his crop.

One approach for controlling cross pollination of plants is to use cytoplasmic male sterility. In onion, for example, cytoplasmic male sterility can be introduced into one inbred line by backcrossing a fertile line which possesses some desired characteristics into plants that have cytoplasmic male sterility. The inbred male-sterile line is then planted in alternate stripe with a male fertile inbred line, in an isolated field. The cross pollination produces, on the male sterile plants, hybrid onion seeds for a commercial crop.

The cytoplasmic male sterility was also utilized in production of hybrid corn seeds as described in the U.S. Pat. No. 2,753,663. Unlike in onion where the vegetative plant parts are of economic value, in corn it is the seed that is harvested. Since male sterile corn plants produce no seeds, a hybrid produced in accordance with a method for production of onion hybrids would be useless to the farmer. The problem was solved by utilizing a fertility restoring plant for the final cross resulting in a hybrid corn seed.

The researchers have attempted to apply the method disclosed in U.S. Pat. No. 2,753,663 to wheat; however, despite continuing efforts, commercially satisfactory restorer plants have not been found. The development of a satisfactory hybrid wheat system has been complicated by the fact that the wheat flower is biexual and since in wheat the anthers are in the florets, the plants are practically always self pollinated. The location of the wheat anthers inside the florets and the fact that pollen is shed before flowers open makes introduction of male sterility in wheat by physical means (such as manual emasculation) commercially unfeasible. A genetic system, based on cytoplasmic sterility, appears to be the only feasible way for commercial production of hybrid wheat seeds.

The invention satisfies the long felt need for a relatively simple, commercially feasible method of producing hybrid wheat seeds.

Thus one object of the invention is to provide a genetic method for a production of hybrid wheat seeds.

Another object of the invention is to provide a commercially feasible and reliable method for production of hybrid wheat seedt.

A further object of the invention is to use cytoplasmic genetic sterility to produce hybrid wheat seeds having desirable properties.

Still another object of the invention is to provide a genetic method for producing hybrid wheat seeds, which does not require special development of the restorer line and in which conventional common wheat cultivars can be used as the restorer line.

Other objects of the invention will become apparent to those skilled in the art upon studying this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a sequence of steps for the production of cytoplasmically male-sterile plants (A-line) to be used for the production of hybrid wheat in accordance with one embodiment of the method of this invention.

FIG. 2 depicts a sequence of steps for production of B-line plants which are used to multiply the available male sterile seeds (A-line) in accordance with one embodiment of this invention.

FIG. 3 depicts a sequence of steps for multiplying available A-line seeds and for producing hybrid wheat seeds in accordance with one embodiment of the present invention.

SUMMARY OF THE INVENTION

In accordance with one aspect of the invention, fertile alloplasmic wheat plants, in which fertility is maintained by at least one specific nuclear gene (Ms) interacting with the cytoplasm, are treated to induce mutations of the specific nuclear gene (Ms) or genes (Ms Ms). Those plants, in which all specific nuclear genes (Ms Ms) are changed by the treatment to mutated nuclear genes (ms ms) and which are therefore male sterile, are selected as A-line seeds. The embryos of seeds, which after treatment contain one mutated nuclear gene (ms) and one specific nuclear gene (Ms), are selfed and those of the resulting seeds that contain only mutated nuclear (ms ms) genes are selected as A-line seeds. The A-line seeds are planted and cross pollinated with a compatible wheat plant (R-line) having specific nuclear genes (Ms Ms) required for maintaining of fertility in the cytoplasm of A-line plants. The resulting hybrid wheat seeds have the cytoplasm of the A-line plants and at least one fertility maintaining specific nuclear gene (Ms).

In accordance with another aspect of the invention, the maintainer plants (B-line) are developed as follows. The A-line plants are cross pollinated with compatible wheat plants (D-line) having cytoplasm, which maintains the plant fertile regardless of the presence or absence of the specific nuclear gene (Ms) or genes (Ms Ms), and having chromosomes which have homozygous specific nuclear genes (Ms Ms). The pollen of the plants grown from the seeds produced by the cross pollination is used to pollinate D-line plants. The seeds produced on the D-line plants are grown and the plants are self pollinated. Some of the resulting seeds from each plant are planted and tested to determine which of the seeds have embryos containing only the mutated nuclear genes (ms ms). The seeds of the plants that are determined to have the mutated nuclear genes (ms ms) and no specific nuclear gene (Ms) or genes (Ms Ms) are selected as B-line seeds.

In accordance with a further aspect of the invention, there is provided a method for a commercial production of hybrid wheat seeds. The seeds of alloplasmic wheat, having cytoplasm that interacts with at least one specific nuclear gene (Ms) to maintain the fertility of the plant, are treated by a mutagenic agent to induce mutations of the specific nuclear genes (Ms Ms) into mutated nuclear genes (ms ms). The seeds, having embryos containing only mutated nuclear genes (ms ms) (i.e. no

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specific nuclear genes (Ms Ms)), are selected as A-line seeds, either directly or by selfing the plants containing one mutated nuclear gene (ms) and one specific nuclear gene (Ms) and selecting those resulting seeds that contain only mutated nuclear genes (ms ms). The A-line seeds are grown and the plants are pollinated by pollen from compatible wheat plants (D-line) having cytoplasm which remains fertile irrespective of the presence of specific nuclear gene (Ms) or genes (Ms Ms) and having chromosomes which include specific nuclear genes (Ms Ms) that are capable of maintaining fertility of the A-line cytoplasm. The resultant seeds are planted and the pollen therefrom is used to pollinate the D-line plants. The seeds produced on D-line plants are then grown and self pollinated (selfed). The seeds of the self pollinated plants, that contain only the mutated nuclear genes (ms ms) are then selected as B-line seeds. The B-line seeds are planted. The pollen from the B-line plants is used to pollinate A-line plants. The A-line plants pollinated by pollen from B-line plants produce seeds containing embryos which have genetic composition of A-line plants. Thus, the A-line seeds are quickly multiplied. The A-line seeds are grown and the plants are crossed with compatible wheat plants (R-line), that have chromosomes containing at least one specific nuclear gene (Ms), which maintains fertility of A-line cytoplasm, producing hybrid wheat seeds.

Other aspects of the invention will become apparent to those skilled in the art upon studying this specification and the appended claims.

DETAILED DESCRIPTION OF THE INVENTION

The seeds of fertile alloplasmic wheat, in which fertility is maintained as the result of the interaction between at least one specific nuclear gene (Ms) and the cytoplasm, are treated to induce mutations of the specific nuclear genes (Ms Ms). As the result of the treatment, the specific nuclear genes (Ms Ms) become mutated nuclear genes (ms ms) which do not maintain fertility of the plants having the cytoplasm present in the alloplasmic wheat plant. Most seeds, in which mutation occurs, contain after treatment in their embryos one specific nuclear gene (Ms) and one mutated nuclear gene (ms). All seeds are planted and the plants are selfed. The resulting seeds include those that possess only mutated nuclear genes (ms ms) in their embryos. The seeds of those plants or their progeny that have only mutated nuclear genes (ms ms) and therefore exhibit cytoplasmic male sterility, are selected as A-line plants. The A-line plants are cross pollinated by pollen from compatible wheat plants (R-line) which have chromosomes that contain specific nuclear genes (Ms Ms) needed for maintaining the fertility in the A-line plants. The cross produces hybrid wheat seeds which have the cytoplasm of the A-line plants and have chromosomes that include at least one specific nuclear gene (Ms) necessary for maintaining the fertility of the hybrid plant.

In practice, only a small number of plants grown from the treated seeds exhibit cytoplasmic sterility (A-line). An additional phase, of extreme importance to the commercial production of hybrid wheat seeds, may be added to the method of this invention to produce maintainer plants (B-line) which when cross pollinated with the A-line plants produce seeds which have genetic composition of A-line plants. Since each A-line plant, when pollinated by the pollen of a B-line plant, produces a large number (250–500) of A-line seeds, the development and use of the B-line permits a rapid multiplication of the available A-line seeds. The A-line plants grown from seeds produced by pollen of B-line plants are used for the final cross to obtain hybrid wheat seeds.

The B-line is developed in accordance with this invention as follows. The A-line plants are cross pollinated with pollen of compatible wheat plants (D-line) having chromosomes which include specific nuclear genes (Ms Ms) which are capable of making plants having the A-line cytoplasm fertile and having cytoplasm that maintains fertility of the plants, regardless of the presence or absence of the specific genes (Ms Ms). The seeds, resulting from the cross, are planted and the pollen grown from these plants is used to cross pollinate D-line plants. The seeds obtained from the cross have fertile cytoplasm of D-line plants and contain either chromosomes having only fertility maintaining genes (Ms Ms) or having a specific nuclear gene (Ms) dominating a mutated gene (ms). The plants grown from these seeds are self pollinated. The seeds produced by self pollination have one of the following three types of embryos:

1. having only specific nuclear genes (Ms Ms);
2. having both a specific nuclear gene (Ms) and a mutated nuclear gene (ms); and
3. having only mutated nuclear genes (ms ms).

All three types of seeds contain D-line cytoplasm; therefore, all plants grown from these seeds are fertile. The B-line seeds are those that contain only mutated nuclear genes (ms ms). To determine which of the seeds are the B-line seeds, the seeds are planted and the pollen from each grown plant is used to pollinate a separate A-line plant. A record of which plant pollen is supplied to which A-line plant, is kept. The resulting seeds are harvested and planted. The plants are visually inspected to determine whether they are fertile or sterile. The seeds of plants, which supplied pollen that produced all sterile progeny when crossed with A-line plants, are selected as B-line seeds.

The B-line plants are then grown from the B-line seeds and crossed with A-line plants. The resulting seeds have a genetic composition of A-line plants. The step of crossing B-line plants with A-line plants can be repeated as often as needed to obtain the desired number of A-line seeds. The seeds of A-line plants are then planted and crossed with R-line plants to produce hybrid wheat seeds.

Throughout this disclosure, the term "alloplasmic wheat" shall mean wheat that has nucleus of wheat and an alien cytoplasm, i.e., cytoplasm which is different from that of common wheat. The term "euplasmic wheat" shall mean wheat plant having wheat cytoplasm and wheat nucleus. The term "compatible wheat plants" shall mean wheat plants that can be cross pollinated to produce seeds.

Two types of seeds are required to initiate the production of hybrid wheat seeds in accordance with this invention:

1. seeds that upon treatment with mutagenic agent become A-line seeds (predecessor of A-line) and,
2. R-line seeds.

The predecessor of A-line seeds are alloplasmic wheat seeds having a cytoplasm that interacts with at least one specific nuclear gene (Ms) to make the plant fertile. The R-line seeds are wheat seeds which contain the specific nuclear genes (Ms Ms) and which are genetically compatible with the A-line plants.

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If the method includes multiplication of A-line seeds, D-line seeds are also required. The D-line seeds have cytoplasm that remains fertile regardless of the presence or absence of the specific nuclear genes (Ms Ms) and have chromosomes that include the specific nuclear genes (Ms Ms) and no mutated genes (ms ms). It should be noted that D-line plants can also serve as R-line plants.

Alloplasmic wheat seeds, that are preferred as A-line predecessor, have Aegilops cytoplasm and *Triticum aestivum* nucleus. Especially preferred are the seeds of alloplasmic wheat plants having cytoplasm of the following Aegilops species: *Ae. squarrosa, Ae. cylindrica, Ae. ventricosa, Ae. crassa, Ae. juvenalis,* and *Ae. uniaristata.*

The preferred R-line seeds include euplasmic and alloplasmic *T. aestivum.* Especially preferred are the following plants: euplasmic *T. aestivum* and alloplasmic *T. aestivum* having cytoplasm and specific nuclear genes of *T. timopheevi, T. zhukovskyi, T. araraticum.*

Those skilled in the art can ascertain, with a minimum amount of experimentation, whether a given plant is suitable for the use in the given system for production of hybrid wheat seeds in accordance with the method of this invention and whether given wheat plants are compatible.

The treatment of predecessor A-line seeds can be accomplished by any method which produces point mutations on the chromosomes. For example, the seeds can be treated with mutagenic chemical substances, such as, diethyl sulphate, ethylene imine, ethyl methanesolfonate, and nitroso ethyl urea, or with ionizing radiation from sources, such as, X-rays, gamma rays and Co 60. The radiation having feqsency from about 10^{17} cycles/sec to about 10^{19} cycles/sec and intensity from about 10 rad/min to about 10,000 rad/min is preferred. The duration of the treatment varies depending on the specific type of the treatment but the duration should be long enough to induce point mutations on the chromosomes but should be terminated before inducing nonviability in seeds or seedlings treated. The preferred treatment with ethyl methanesulfonate lasts from about 12 to about 24 hours. The usual duration of the irradiation in the preferred range of frequency and intensity is from about 1 to about 50 hours.

The preferred method of producing hybrid wheat seeds can be subdivided into the following two phases:

1. production of the A-line;
2. production of the hybrid wheat seeds.

The following additional two phases are needed if multiplication of A-line seeds is employed to produce commercial quantities of hybrid wheat seeds.

3. production of the B-line;
4. multiplication of the A-line.

It is contemplated that in a commercial application, the A line and B line plants are produced first. Then the A-line seeds are multiplied and finally hybrid wheat seeds are produced by crossing A-line plants with the R-line plants. The preferred embodiment of the invention will now be described in reference to the drawings; the sequence of steps will be that of a commercial application.

Production of A-line

The seeds of alloplasmic *T. aestivum* having specific nuclear genes (Ms Ms), which maintain fertility of its *Ae. squarrosa* cytoplasm are soaked in a water solution of the mixture of an alkali metal salt of a strong acid and an alkali metal hydroxide, such as, potassium acid phosphate and sodium hydroxide, for a period of time sufficient to allow the solution to fully permeate the seeds. The relative amounts of the alkali metal salt and of the alkali metal hydroxide are such as to maintain the water solution of pH between 6 and 10 and preferably between 7.5 and 8.5. The concentration of alkali metal salt and of alkali metal hydroxide can vary considerably. The preferred range of concentration of alkali metal salt is from about 0.01M (M=molar) to about 0.1M and the preferred concentration of alkali metal hydroxide is from about 0.001M to about 0.05M. The specially preferred ranges of concentration of alkali metal salt and alkali metal hydroxide are from about 0.03M to about 0.07M and from about 0.005M to about 0.015M, respectively. The temperature of the presoaking can vary considerably, the preferred range being from about 50° F. (10° C.) to about 80° F. (27° C.).

The soaked seeds are contacted with a mutagen, such as, water solution of ethyl methane sulfonate (EMS) for a sufficient period of time at such conditions including concentration, pH and temperature as to induce point mutations in the chromosomes in the seeds. The usual ranges for the treatment are as follows: EMS concentration, in a buffer solution of the same composition as for presoaking, from about 0.05M to about 0.3M, pH range from about 6 to about 10, temperature from about 50° F. (10° C.) to about 80° F. (27° C.).

Some of the treated seeds become inviable or they produce sterile plants as the result of non-genetic effect (toxic) on seeds and seedlings. Such non-genetic sterility is generally not inheritable. Furthermore, statistically in most of the embryos of seeds that undergo mutation, only one specific nuclear gene is mutated. To assure that only those plants that contain only mutated nuclear genes (ms ms) are chosen as male-sterile A-line plants, the treated seeds are grown. All the seeds grown have embryos containing *Ae. squarrosa* cytoplasm and *T. aestivum* nucleus (as shown in FIG. 1). The seeds have one of the three combinations of genes: ms ms, Ms Ms, Ms ms. Statistically ms ms combination is unlikely to occur in the first generation of plants grown from the treated seeds, therefore, the assumption is made that all plants fall into the last two categories. As depicted in FIG. 1, all the seeds are planted and grown. The resulting plants are self pollinated (selfed) to produce seeds that include those having only mutated nuclear genes (ms ms). The seeds are harvested and planted in rows. Each row contains seeds from one plant. Some of the seeds from each plant are saved. To determine whether the plants are sterile or fertile, all plants are visually inspected at anthesis. The sterile plants have malformed anthers and their florets remain open longer than those of the fertile plants. Those rows that contain a large proportion of sterile plants come from seeds that have only mutated genes (ms ms). The remaining seeds from plants that produced sterile seeds are selected as A-line seeds. This is because, since the specific nuclear gene (Ms) is dominant with respect to mutated nuclear gene (ms), only plants having homozygous recessive nuclear genes (ms ms) exhibit genetic sterility. The remaining seeds of those plants are saved as additional source of A-line seeds.

Production of B-line

Referring now to FIG. 2, the A-line seeds are planted and the plants grown are crossed with *T. aestivum* plants (common wheat). The chromosomes of *T. ae-*

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tivum contain specific nuclear genes (Ms Ms) which can maintain or restore fertility of plants having *Ae. squarrosa* cytoplasm. The plants having *T. aestivum* cytoplasm remain fertile regardless of the presence or absence of the specific nuclear genes (Ms Ms). The seeds produced by the cross have *Ae. squarrosa* cytoplasm and *T. aestivum* chromosomes containing both a specific fertility maintaining or restoring gene (Ms) and a mutated nuclear gene (ms). Since the mutated nuclear gene (ms) is recessive, it is dominated by the fertility maintaining or restoring gene (Ms) and the plants grown from these seeds are male fertile. The male fertile plants are then crossed with *T. aestivum* (common wheat) plant, but this time the *T. aestivum* plant being the female parent. To prevent self pollination and to make the desired cross, the florets of the *T. aestivum* plants are manually emasculated, as by removing anthers with tweezers. All of the resulting plants from the cross have *T. aestivum* cytoplasm and chromosomes that either contain all specific nuclear gene (Ms) (homozygous) or one specific nuclear gene (Ms) gene and one mutated nuclear gene (ms) (heterozygous). The seeds of these plants are grown and the plants are selfed. The embryos of the resulting seeds have *T. aestivum* cytoplasm and any of the three combinations of genes: Ms ms, Ms Ms and ms ms. Since plants containing *T. aestivum* cytoplasm remain fertile irrespective of presence of specific nuclear gene (Ms), all seeds produce fertile plants.

To select the seeds that have embryos containing homozygous mutated nuclear genes (ms ms), the following procedure is followed. Some of the seeds from each plant are planted and grown. The pollen from each plant is used to pollinate a separate A-line plant or a separate spike on an A-line plant. A record of which A-line plant is pollinated by pollen from which plant, is kept. The resulting seeds are harvested and planted. The resulting plants are visually examined to determine whether they are sterile or fertile in accordance with the procedure discussed before (i.e. by examining their anthers and checking the time period during which florets remain open). The seeds of those plants, which produced functional pollen but which resulted in all male sterile progeny when crossed with male sterile A-line plants, are selected as B-line seeds.

Multiplication of the A-line

Referring now to FIG. 3, the B-line seeds are planted and these plants are crossed with the A-line plants. The B-line plants i.e., plants that have *T. aestivum* cytoplasm and chromosomes that include the mutated recessive genes (ms ms) and no specific nuclear gene (Ms) produce seeds in A-line plants which have a genetic composition of A-line plants. Since each A-line plant generally produces from about 250 to about 500 seeds, the number of available A-line seeds is quickly multiplied.

Production of Hybrid Wheat Seeds

As illustrated in FIG. 3, the A-line seeds are then planted and cross pollinated with the pollen from *T. aestivum* (euplasmic) plants (common wheat). The euplasmic *T. aestivum* plants (R-line) have *T. aestivum* cytoplasm and *T. aestivum* nucleus which contains specific nuclear genes (Ms Ms) which are capable of maintaining or restoring fertility of plants having *Ae. squarrosa* cytoplasm. The resulting hybrid wheat seeds have *Ae. squarrosa* cytoplasm and *T. aestivum* nucleus which includes one specific nuclear gene (Ms) and one mutated nuclear gene (ms). Since the Ms gene is dominant over the ms gene, the plants grown from the hybrid wheat seeds are fertile.

The following example is intended to further illustrate the invention. It is not intended to restrict the scope of the claimed invention in any manner.

EXAMPLE

Two Phase Production of Hybrid Wheat Seeds

Five hundred seeds from plants having *Ae. squarrosa* cytoplasm and *T. aestivum* nucleus, were presoaked for 8 hours at a temperature of 21° C. in a water solution of potassium acid phosphate and sodium hydroxide adjusted to pH 8. The seeds were removed from the buffer solution and immersed in a solution comprising 0.35 volume percent of ethyl methanesulphate (EMS) and the rest buffer solution having the same composition as the presoaking solution. The EMS-buffer solution was adjusted to pH 8 and maintained at 21° C. during the treatment.

After 16 hours, the seeds were removed from the EMS-buffer solution and planted in a greenhouse. The spikes of the resultant plants were bagged and the plants were allowed to self pollinate. The 45,000 seeds obtained from self pollination were harvested and planted in the field. The seeds were planted about 3 to 4 inches apart within the rows, and space between the rows was about 2.5 to 3.0 feet. The plants were visually examined for anther abnormalities at the time when florets started opening, i.e., after 3 to 5 days after spike emergence from the topmost leaf sheet on the primary tiller of a plant. One or more spikes of plants having abnormal anthers were bagged to exclude the possibility of seed set resulting from cross pollination from the neighboring fertile plants. Those plants that had malformed anthers and had florets that remained opened, were considered completely or highly sterile. Completely or highly sterile plants were crossed with *T. aestivum* cultivars Chris. The resulting seeds from the crossed spikes from 39 of the 45,000 plants were harvested for evaluation as follows. The seeds from crosses of the 39 plants were planted in the greenhouse. The spikes of the plants were bagged to obtain selfed seeds. The selfed seeds were planted and grown in the field. The plants were visually examined for sterility in accordance with the technique described above. The seeds from plants that produced sterile plants were chosen as A-line seeds. The A-line seeds were planted in alternate rows with the seeds of *T. aestivum* cultivar Chris and the resulting plants were allowed to cross pollinate resulting in hybrid wheat seeds, which produced fertile plants when grown.

Many changes and modifications will occur to those skilled in the art upon studying this disclosure. All changes that are within the spirit of the invention are intended to be included within its scope as defined by the appended claims.

I claim:

1. A method for producing hybrid wheat seeds which comprises:
   (a) inducing mutation of a specific nuclear gene in embryos of seeds of alloplasmic wheat plants, having chromosomes of wheat and a cytoplasm which is maintained fertile as the result of interaction between it and at least one specific nuclear gene;
   (b) selfing plants grown from seeds of step "a" to produce seeds;

   (c) selecting from seeds produced in step "b" those that contain only mutated nuclear genes in their embryos and are therefore male sterile; and,
   (d) crossing plants grown from the seeds of step "c" with compatible wheat plants, having chromosomes containing specific nuclear genes capable of maintaining fertility of the cytoplasm of plants produced in step "c", to produce hybrid wheat seeds having cytoplasm of the alloplasmic wheat plant and embryo having at least one fertility maintaining specific nuclear gene dominating the mutated nuclear gene.

2. A method as claimed in claim 1 wherein the seeds of alloplasmic wheat have Aegilops cytoplasm and *Triticum aestivum* nucleus.

3. A product produced in accordance with the method of claim 2.

4. A method as claimed in claim 1 wherein the seeds of alloplasmic wheat are selected from the group consisting of *Ae. squarrosa/T. aestivum, Ae. cylindrica/T. aestivum, Ae. ventricosa/T. aestivum, Ae. crassa/T. aestivum, Ae. juvenalis/T. aestivum,* and *Ae. uniaristata/T. aestivum,* and the compatible wheat plant is selected from the group consisting of *T. aestivum, T. aestivum/T. timopheevi, T. aestivum/T. zhukovskyi,* and *T. aestivum/T. araraticum.*

5. A product produced in accordance with the method of claim 4.

6. A method as claimed in claim 1 wherein the seeds of step "a" are *Ae. squarrosa/T. aestivum* and the compatible wheat plant is *T. aestivum.*

7. A method as claimed in claim 6 wherein the mutations are induced by treatment with a mutagenic chemical.

8. A product produced in accordance with the method of claim 7.

9. A method as claimed in claim 6 wherein the mutations are induced by ionizing radiation.

10. A method as claimed in claim 6 wherein the step of inducing mutation comprises:
   soaking the seeds in a water solution of a mixture of an alkali metal salt of a strong acid and an alkali metal hydroxide for a sufficient period of time to allow water solution to fully permeate the seeds; and
   contacting the seeds removed from the water solution of the soaking step with ethyl methansulfonate for a sufficient period of time and at such conditions including temperature, pH and concentration as to induce said mutation, the contacting being terminated before said seeds become nonviable.

11. A method as claimed in claim 1 wherein the mutations are induced by treatment with a mutagenic chemical.

12. A method as claimed in claim 1 wherein the mutations are induced by ionizing radiation.

13. A product produced in accordance with the method of claim 1.

14. A method for producing seeds to be used for multiplying alloplasmic wheat A-line seeds having chromosomes of wheat containing only mutated specific genes and cytoplasm maintaining fertility of a plant only in the presence of at least one specific nuclear gene, said method comprising the following steps:
   (a) crossing the plants grown from said A-line seeds with compatible wheat plants having specific nuclear genes capable of maintaining fertility of the cytoplasm of the alloplasmic A-line wheat plant and cytoplasm that remains fertile regardless of the presence of a least one said specific nuclear gene;
   (b) pollinating said compatible wheat plants with pollen from plants grown from seeds of step "a";
   (c) selfing plants grown from seeds obtained in step "b" to obtain seeds including B-line seeds containing in their embryos fertile cytoplasm of the compatible wheat plants and only mutated specific genes, said B-line seeds when grown into plants and crossed with said A-line plants producing seeds having genetic composition of A-line plants;
   (d) selecting B-line seeds from seeds of step "c".

15. A method as claimed in claim 14 wherein A-line plants are *Ae. squarrosa/T. aestivum* and the compatible wheat plant is *T. aestivum.*

16. A product produced in accordance with the method of claim 14.

17. A method for producing male-sterile alloplasmic wheat seed which comprises the following steps:
   (a) inducing mutation of a specific nuclear gene in embryos of seeds of alloplasmic wheat plants, having chromosomes of wheat and a cytoplasm which is maintained fertile as the result of interaction between it and at least one specific nuclear gene;
   (b) selfing plants grown from seeds of step "a" to produce seeds; and,
   (c) selecting from seeds produced in step "b" those that contain only mutated nuclear genes in their embryos and are therefore male sterile.

18. A method as claimed in claim 17 wherein the seeds of alloplasmic wheat are selected from the group consisting of *Ae. squarrosa/T. aestivum, Ae. cylindrica/T. aestivum, Ae. ventricosa/T. aestivum, Ae. crassa/T. aestivum, Ae. juvenalis/T. aestivum,* and *Ae. uniaristata/T. aestivum,* and the compatible wheat plant is selected from the group consisting of *T. aestivum, T. aestivum/T. timopheevi, T. aestivum/T. zhukovskyi,* and *T. aestivum/T. araraticum.*

19. A method of claim 18 wherein said first compatible wheat plants are the same as said second compatible wheat plants.

20. A method as claimed in claim 19 wherein the seeds of alloplasmic wheat are selected from the group consisting of *Ae. squarrosa/T. aestivum, Ae. cylindrica/T. aestivum, Ae. ventricosa/T. aestivum, Ae. crassa/T. aestivum, Ae. juvenalis/T. aestivum,* and *Ae. uniaristata/T. aestivum,* and the compatible wheat plant is selected from the group consisting of *T. aestivum, T. aestivum/T. timopheevi, T. aestivum/T. zhukovskyi,* and *T. aestivum/T. araraticum.*

21. A product produced in accordance with the method of claim 17.

22. A method for producing hybrid wheat seeds which comprises the following steps:
   (a) inducing mutations of fertility maintaining nuclear genes into mutated nuclear genes in seeds of an alloplasmic wheat plant, having cytoplasm depending for its fertility on the interaction with at least one fertility maintaining nuclear genes;
   (b) selfing plants grown from said seeds to obtain seeds;
   (c) selecting seeds producing male fertile plants, said seeds having in their embryos only mutated nuclear genes;
   (d) crossing the plants grown from seeds of step "c" with a first compatible wheat plant having a cytoplasm remaining fertile regardless of the presence

of said specific nuclear genes and having chromosomes containing said specific nuclear genes;

(e) pollinating said first compatible wheat plant with the pollen from the plants grown from seeds of step "d";

(f) selfing plants grown from the seeds produced in step "e";

(g) selecting from seeds produced in step "f" those that contain only mutated nuclear genes;

(h) crossing plants grown from seeds selected in step "g" with plants grown from seeds of step "c";

(i) crossing plants grown from seeds produced in step "h" with a second compatible wheat plant having chromosomes containing said specific nuclear genes to produce seeds of a hybrid wheat plant.

23. A product produced in accordance with the method of claim 22.

24. A method for producing hybrid wheat seeds which comprises the following steps:

(a) treating seeds of *T. aestivum*, having homozygous specific nuclear genes interacting with its alien *Ae. squarrosa* cytoplasm to maintain fertility, to cause mutation of specific nuclear gene into mutated nuclear gene, said *Ae. squarrosa* cytoplasm requiring interaction with at least one specific nuclear gene to maintain fertility;

(b) selfing plants grown from the treated seeds and selecting those resultant seeds containing homozygous mutated nuclear genes;

(c) crossing male sterile plants from seeds of step "b" with T. aestivum plants to produce seeds;

(d) pollinating T. aestivum plants with pollen of plants grown from seeds produced in step "c",

(e) selfing plants grown from seeds produced in step "d";

(f) selecting seeds from step "e" having homozygous mutated nuclear genes;

(g) crossing plants grown from seeds selected in step "f" with plants grown from seeds selected in step "b" to multiply the seed having *Ae. squarrosa* cytoplasm and homozygous mutated nuclear genes in its *T. aestivum* nucleus;

(h) crossing plants having *Ae. squarrosa* cytoplasm and homozygous mutated nuclear genes in *T. aestivum* nucleus with euplasmic *T. aestivum* to produce hybrid wheat seeds.

25. A product produced in accordance with the method of claim 24.

* * * * *

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U.S. Patent No. 4,406,086

United States Patent [19]

Hayward

[11] **4,406,086**

[45] **Sep. 27, 1983**

[54] **WHEAT AND METHOD OF PRODUCING THE SAME**

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[51] Int. Cl.³ A01H 1/02

[52] U.S. Cl. 47/58; 47/DIG. 1

[58] Field of Search ..... 47/58, DIG. 1

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[57] **ABSTRACT**

The method of producing wheat seeds comprising the steps of crossing plants grown from a first cross of 'Thorne' and 'Clarkan'; and crossing the plants from the seeds of Thorne/Clarkan with plants from the seed of 'Etoile de Choisy'; crossing seeds from a semi-dwarf mutant of the Etoile de Choisy//Thorne/Clarkan cross with plants grown from the seeds of CI 13390; and crossing the offspring therefrom with plants grown from seeds of 'Coker 68-15'; and selfing plants grown from the seeds of this cross. Selfing of plants after each cross to permit a pure line selection is done. The product of this method further defines the invention.

2 Claims, No Drawings

65090

PLAINTIFF'S EXHIBIT F

WHEAT AND METHOD OF PRODUCING THE SAME

BACKGROUND OF THE INVENTION

This invention relates to wheat and the method of producing the same.

Many varieties of wheat have been developed to accommodate different growing conditions, wheat usages, and disease and insect resistance. Winter wheat grown in colder climates varies from spring wheat in more moderate climates; hard wheat and soft wheat have different nutritional characteristics, and some wheat varieties are better suited to resist certain insects and diseases than others.

Despite the advances which have been made in wheat breeding, the wheat industry is lacking a wheat which yields consistently high, and which at the same time has good to excellent qualities in the areas of milling and baking; disease and insect resistance; and good straw strength.

It is therefore an object of this invention to provide a soft red winter wheat which has a high yieldability, and which at the same time possesses good milling and baking qualities; good disease and insect resistance; and good straw strength.

These and other objects will be apparent to those skilled in the art.

SUMMARY OF THE INVENTION

The method of this invention entails the selective sequential crossing of certain predetermined known wheat varieties in conjunction with the making of pure line selections after the plants of each cross are selfed. The basic crosses of this invention are as follows:

(1) Thorne/Clarkan.

(2) Etoile de Choisy with Thorne/Clarkan.

(3) Etoile de Choisy//Thorne/Clarkan with CI 13390.

(4) Coker 68-15 with Thorne/Clarkan//Etoile de Choisy/3/CI 13390.

This creates the genealogy of:

Coker 68-15/4/Etoile de Choisy//Thorne/Clarkan/3/CI 13390.

Plants from the last cross are selfed to provide the pure line of wheat of this invention which is referred to herein as variety '2550', *Triticum aestivum* L., em Thell, which is a soft red winter wheat.

DETAILED DESCRIPTION OF THE INVENTION

The wheat varieties used in the method of this invention, resulting in the product of this invention, are known in the art and are identified herein by the designations by which they are identified in the art. Further details of the genealogy of these varieties are a matter of public record and are readily available.

The initial step of this invention is to cross the plants of Thorne and Clarkan. The plants from the seed of this cross were selfed to permit a pure line selection which reflected the characteristics of the cross as distinguished from the characteristics of either parent.

Plants from the pure line selection of the preceding cross were then crossed with plants from the French variety, Etoile de Choisy. The cross between Etoile de Choisy//Thorne/Clarkan has been made in the prior art and does not of itself constitute a part of this invention. Plants from this cross were selfed, and seed was selected from a semi-dwarf mutant. Plants from the seed of this mutant were then crossed with plants from the seed of CI 13390. Through selfing, a pure line selection from this cross was crossed to Coker 68-15.

Selections were made from the F_2 generation of the last-described cross for plant height, straw strength, maturity and head type. The F_3 generation was then made from these selections, and further selections were then made for winterhardiness, height, maturity, straw strength, disease resistance and for plant and head type. Seed from this selection was used for the F_4 generation which was examined particularly for yieldability. A reselection was made from an F_5 generation and traced to a single F_4 plant. Plants from this selection were tested in yield trials and for milling and baking quality. Final selection was made in the F_8 generation and this selection is variety 2550, *Triticum aestivum* L., em Thell.

2550 has shown uniformity and stability for all of the traits described in Table I, with the only variant observed and expected is a very low frequency of awns (<1/30,000).

TABLE I

OBJECTIVE DESCRIPTION OF VARIETY

Kind: Common
Type: Winter, soft, red
Season - Number of days from emergence to:
- (a) First flowering: 229
- (b) Last flowering: 236

Maturity (50%): Flowering: 2 days later than 'Arthur'
Plant Height: 95 cm high (4 cm shorter than Arthur)
Plant Coloring at Booting: Blue green
Stem:
- (a) Anthocyanin: Absent
- (b) Hairiness of last internode of rachis: Absent
- (c) Number of nodes: 4
- (d) Waxy bloom: Present
- (e) Internodes: Hollow
- (f) Cm internode length between flag leaf and leaf below: 22

Auricles:
- (a) Anthocyanin: Absent
- (b) Hairiness: Absent

Leaf:
- (a) Flag leaf at booting stage: Recurved
- (b) Hairs of first leaf sheath: Absent
- (c) Width of first leaf below flag leaf: 12 mm
- (d) Flag leaf: Not twisted
- (e) Waxy bloom of flag leaf sheath: Present
- (f) Length of first leaf below flag leaf: 23 cm

Head:
- (a) Density: Lax
- (b) Awnedness: Awnleted
- (c) Color at maturity: Yellow
- (d) Length: 8 cm
- (e) Shape: Tapering
- (f) Width: 12 mm

Glumes at Maturity:
- (a) Length: Long (CA. 9 mm)
- (b) Shoulder shape: Oblique
- (c) Width: Wide (CA 4 mm)
- (d) Beak: Acute

Coleoptile Color: White
Juvenile Plant Growth Habit: Semi-erect
Seed:
- (a) Shape: Ovate
- (b) Brush: Medium
- (c) Phenol reaction: Very dark brown, nearly black, similar to 'Monon'
- (d) Color: Red
- (e) Length: 7 mm
- (f) Width: 3 mm
- (g) Cheek: Rounded
- (h) Brush: Not collared
- (i) Weight per 1000 seeds: 36 gm

Seed Crease:
- (a) Width: 60% or less of kernel 'Winoka'
- (b) Depth: 20% or less of kernel 'Scout'

Disease:
- (a) Stem rust: Susceptible
- (b) Loose smut: Susceptible
- (c) Soil Borne Mosaic Virus: Resistant
- (d) Spindle Streak Mosaic Virus: Resistant

Insect:
- (a) Aphid: Resistant
- (b) Hessian fly: Susceptible to races B, D, E and G; resistant to races GP, A, C and F

Resemblance to Known Varieties:

Character	Name of Variety
Plant tillering	'Abe'
Leaf size	Abe
Leaf color	'McNair 1003'
Leaf carriage	Abe
Seed size	'Pioneer Variety 576'
Seed shape	Pioneer Variety 576
Coleoptile elongation	Pioneer Variety 576
Seedling pigmentation	Pioneer Variety 576

Deposit of 2550 seeds has been made prior to the filing of this application at the National Seed Storage Laboratory, Colorado State University, Fort Collins, Colo., under Laboratory Accession No. TV 24904 and NSSL Serial Number 163525.

As reflected in the above Table I, the flowering date of 2550 is two days later than the variety Arthur and one day earlier than Pioneer variety S76. At Tipton, Ind., when seeded about October 1, average first flowering is May 27 or about 229 days after emergence. Last flowering averages about seven days later. Environmental factors influence flowering of varieties differently.

2550 has averaged 95 cm in height, which is about 4 cm shorter than Arthur and Pioneer variety S76.

The plant color of 2550 at booting stage is a distinct blue-green while Arthur is green and 'Beau' is dark green. Another color of 2550 is yellow, similar to Pioneer variety S76.

Anthocyanin has been absent in the stem of 2550. A heavy waxy bloom occurs on the stem. Internodes of 2550 are hollow. At maturity, the stems are yellow and strong. Normally four stem nodes are present above ground. Internode length between flag leaf and leaf below is about 22 cm. The last internode of the rachis is free of hairiness.

Auricles of 2550 are lacking in anthocyanin and are free of hairiness.

Flag leaves are generally recurved at booting and are not twisted. Hairs are absent from the first leaf sheath. A heavy waxy bloom occurs on the flag leaf sheath. The first leaf below the flag leaf averages about 12 mm wide and 23 cm long.

Spikes are generally mid-dense to lax, tapering, awnleted, yellow and generally nodding at maturity. The apical awnlets are rough and about 15–20 mm long. Spike width and length averages about 12 mm and 8 cm, respectively. However, spike width and length are variable with plant population and level of production.

The glumes of 2550 are long and wide, glabrous and generally the shoulders are oblique. The beaks are acute.

The coleoptile color is white and seedling anthocyanin is absent. Juvenile plant growth habit is semi-erect.

The kernels are red in color, ovate in shape, with rounded cheeks and a shallow crease. The brush is not collared and medium in size. The embryo is large in size. The kernels average 7 mm long and 3 mm wide and weight about 36 g per 1000. Phenol reaction is very dark brown, nearly black, similar to Monon.

2550 is moderately resistant to leaf rust (*Puccinia recondita* f. sp. *tritici*) and susceptible to stem rust (*P. graminis* f. sp. *tritici*) races currently common in the soft red winter wheat region. 2550 has not been tested for specific races of leaf rust nor has it been tested for stripe rust (*P. striiformis*), bunt (*Tilletia foetida* and *T. caries*) and loose smut (*Ustilago tritici*). While susceptible to powdery mildew (*Erysiphe graminis* f. sp. *tritici*), the progression of the disease up the plant is slow.

2550 has a good level of resistance to soil borne mosaic virus, spindle streak mosiac virus and barley yellow dwarf virus. In testing for BYDV, 'Clintland 64' oat variety was used as a very susceptible check, Abe as the susceptible wheat variety check and 'Hart' as a wheat variety check with notable resistance. Results were as follows: Clintland 64-6; Abe-5; Hart-3; 2550-2.

2550 is resistant to Hessian fly races GP, A, C and F and susceptible to races B, D, E and G. 2550 has not been tested for sawfly, greenbug and cereal leaf beetle.

2550 is most similar to the soft red winter Pioneer variety S76 in a number of plant and seed characteristics. Certain similarities are expected since one half the parentage of 2550 and S76 is the same. However, there are a number of distinguishable differences between the two varieties. The most easily recognized difference is that S76 is awned and 2550 is awnleted. Plant height of 2550 averages about 4 cm shorter. Less notable differences between the two varieties are: The plant color of 2550 at booting stage is a distinct blue-green, while S76 is green to slight blue-green. A heavy waxy bloom occurs on the stem and flag leaf sheath of 2550 while only a light and moderate waxy bloom occurs on the stem and flag leaf sheath respectively of S76. Shoulders of the glume are oblique on 2550 and wanting on S76. Beaks are acute on 2550 and acuminate on S76.

As reflected in Table 2, 2550 is higher yielding and has a higher level of field resistance to prevalent races of leaf rust and powdery mildew than S76. S76 has better straw strength and more resistance to spindle streak mosaic virus and soil borne mosaic virus than 2550.

TABLE 2

Performance of Pioneer Varieties 2550 and 2553 and Standard Varieties Grown in Elite Yield Trials

Variety	Yield bu/acre (72)***	Test Weight lbs/bu (51)	Height cm (48)	Days to Flowering after 4/1 (39)	Lodging** Score (45)	Powdery** Mildew (13)	Leaf** Rust (9)	Spindle Streak** Mosaic Virus (3)	Soil Borne** Mosaic Virus (4)
2550	71.4	57.6	95	55.4	6.5	6.1	8.0	7.0	6.2
2553	68.0	59.0	96	55.7	8.2	3.8	6.8	8.0	7.0
S76	63.4	57.8	99	56.4	7.5	4.1	6.4	8.3	7.5
S78	62.6	57.5	93	57.2	6.8	3.5	7.3	8.7	5.8
Hart	62.4	57.8	103	55.1	6.7	4.1	5.7	7.7	7.0
Abe	60.2	58.7	99	54.3	4.7	6.2	4.5	4.7	4.2

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TABLE 2-continued

Performance of Pioneer Varieties 2550 and 2553 and Standard Varieties Grown in Elite Yield Trials

Variety	Yield bu/acre (72)***	Test Weight lbs/bu (51)	Height cm (48)	Days to Flowering after 4/1 (39)	Lodging** Score (45)	Powdery** Mildew (13)	Leaf** Rust (9)	Spindle Streak** Mosaic Virus (3)	Soil Borne** Mosaic Virus (4)
Beau	39.9	59.4	99	54.8	6.2	6.6	4.9	5.0	4.0
Sullivan	38.1	59.2	103	53.6	4.5	6.2	3.5	4.0	5.8

**Scale 1-9 where 9 = excellent or resistant and 1 = poor or 100% susceptible
***Number in parenthesis - replications.

Since half the parentage of 2550 is Coker 68-15, there are similarities between 2550 and Coker 68-15. These varieties are readily distinguishable by their level of winterhardiness. In winterhardiness tests (1-9 scale with 9 being most winterhardy), the average readings were 7.0 and 3.0 for 2550 and Coker 68-15 respectively.

As shown in Table 2, 2550 has an excellent yield record when compared with the current leading soft red winter wheat varieties, including approximately a 10% increase in yield over Pioneer variety S76. In the presence of soil borne mosaic virus or spindle streak mosaic virus, 2550 has a pronounced yield advantage over susceptible varieties. Short plant height and good straw strength give 2550 excellent resistance to lodging, and this enhances yieldability.

The milling and baking qualities of 2550 are generally equivalent to current varieties commonly grown in the SRW region. Flour protein is consistently lower (desirable) than Abe. It has better protein levels and break flour yields than Pioneer variety S76, as shown in the following Table 3.

TABLE 3

Results of Quality Testing on 2550 (Pioneer Wheat Quality Lab)

Test/Sample	Flour Yield (%)	Break Flour (%)	Flour Protein (%)	AWRC (%)	Cookie Diam. (cm.)	PSI (%)
Test I - Average Data (2 locations)						
2550	67.6	36.4	10.7	55.3	17.9	45.6
Abe	66.7	37.3	12.5	53.3	17.9	51.9
Avg. all checks	67.4	37.0	12.3	53.7	17.8	52.2
Test II - Average Data (3 locations)						
2550	66.0	33.9	7.5	54.3	19.7	44.8
Abe	68.2	35.4	8.3	51.4	19.2	51.1
Avg. all checks	65.6	35.3	8.7	53.9	19.3	48.8
Test III - Average Data (6 locations)						
2550	66.1	34.8	7.6	56.2	19.3	43.7
Abe	67.2	34.1	8.5	53.8	19.5	46.3
Avg. all checks	66.3	33.8	8.7	54.2	19.5	44.8
Test IV - Average Data (7 locations)						
2550	70.0	38.1	9.4	55.4	18.8	32.7
Abe	70.2	36.1	10.4	53.7	18.7	32.2
Avg. all checks	69.1	36.2	10.4	54.4	18.6	31.7

NOTES:
Locations tested include: Longmont, Illinois; Fort Branch and Tipton, Indiana; and Tiffin, Ohio.
Check varieties include various combinations of: Abe, Beau, Coker 68-15, Double Crop, Pioneer W304, Hart, McNair 3001, Omni, Roland, Ruler, Sullivan and Titan.
Methods:
Milling = Brabender Quadrumat Sr. Mill
Protein - Udy method
AWRC - Micro method on milled flour
Cookie diameter - mean diameter of two cookies
PSI - Through '79 - Sonic sifter
- From '80 on - A B grader, sieve shaker

While making the crosses of the method of this invention, the variety used as the male or female is not deemed to be crucial, although the first designated variety is deemed to be the female parent, and the second variety is the male parent. The crosses are accomplished by conventional methods whereby male anthers are removed from a plant to create a female plant; the head of the female plant is then covered to protect contamination; and then pollen grain from anthers of the desired male plant are deposited on the stigmas of the female plant which remains covered to prevent contamination.

The principal advantage of 2550 is its high yieldability which demonstrates a substantial improvement over existing varieties. This high yieldabilty, coupled with good milling and baking qualities, good disease and insect resistance, and good straw strength, provides a superior wheat. Accordingly, this invention is seen to accomplish at least all of its stated objectives.

What is claimed is:

1. A method of producing wheat seeds, comprising:
(a) crossing plants grown from seeds of Thorne and Clarkan;
(b) developing a pure line from the seeds produced in step "a", and crossing plants from such line with plants grown from seeds of Etoile de Choisy;
(c) developing a pure line from the seeds from a semidwarf mutant produced in step "b", and crossing plants from such line with plants grown from seeds of CI 13390;
(d) developing a pure line from the seeds produced in step "c" and crossing plants from such line with plants grown from seeds of Coker 68-15;
(e) and developing a pure line from the seeds produced in step "d" and harvesting the seed resulting from said line.

2. Seed produced in accordance with the method of claim 1.

* * * * *

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(6)

Supreme Court, U.S.
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No. 99-1996

In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

BRIEF FOR PETITIONERS

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QUESTION PRESENTED

Are patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, et seq., and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-64, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants or plant varieties?

PARTY AND CORPORATE DISCLOSURE STATEMENT

The parties to the proceeding are those listed in the caption.

There is no parent or publicly held company owning 10% or more of the stock of any of the corporate petitioners.

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CITATIONS OF OPINIONS AND ORDERS ENTERED IN THE CASE

The opinion (Pet.App. 1-9) of the panel of the Federal Circuit is reported as *Pioneer Hi-Bred Internat., Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374 (Fed.Cir. 2000), *cert. granted*, ___ U.S. ___, 121 S.Ct. 1077 (2001). The circuit's order (Pet.App. 10-12) that granted the petitioners' petition for interlocutory appeal is unreported. The district court's order (Pet.App. 13-39) that denied the petitioners' motion for summary judgment on the defense of patent invalidity is unreported. The circuit's order (Pet.App. 40-41) that denied the petitioners' petition for rehearing is unreported.

STATEMENT OF JURISDICTION

The district court's jurisdiction rested on 28 U.S.C. § 1338(a), which provides that the district courts "shall have jurisdiction of any civil action arising under any act of Congress relating to patents. . . . " The Federal Circuit's jurisdiction rested on 28 U.S.C. §§ 1292(b) and (c)(1), as the circuit granted the petitioners' timely filed petition for interlocutory appeal from the district court's order that denied petitioners' motion for summary judgment on the patent invalidity defense. The circuit otherwise had jurisdiction of the appeal under 28 U.S.C. § 1295. This Court's jurisdiction rests on 28 U.S.C. § 1254(1), as the petitioners filed their petition for a writ of certiorari within 90 days of the circuit's denial of the petitioners' timely filed petition for rehearing. The rehearing petition was referred along with the response to the circuit judges who were in regular active service. This Court granted the petition for a writ of certiorari by order entered on February 20, 2001.

STATUTORY PROVISIONS INVOLVED

1. Revised Statutes, §§ 4884, 4886 (the precursor of 35 U.S.C. § 101) and 4888, as amended by the 1930 Plant Patent Act. (Pet.App. 42)
2. 35 U.S.C. § 101, defining the subject matter of "Inventions patentable." (Pet.App. 43)
3. 35 U.S.C. § 161, defining the subject matter of "Patents for Plants" issued under Title 35. (Pet.App. 44)
4. 35 U.S.C. § 163, limiting a plant patent grant to the right to exclude others from asexually reproducing the plant or selling or using the plant so reproduced. (Pet.App. 44)
5. The Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321, 2323, 2401(a)(3), 2402 (defining the right of a plant breeder to obtain a PVP certificate on a plant variety that has been sexually reproduced – that is, by seed) (Pet.App. 45), 2541 (sexual reproduction of a plant variety, or selling or using plants so reproduced, constitutes infringement) (Pet.App. 46), 2543 (infringement exception for a farmer saving seed) (Pet.App. 48), 2544 (infringement exception for plant breeding research) (Pet.App. 43) and 2567.
6. Plant Patent Amendments Act of 1998 P.L. 105-289 (HR 1197), October 27, 1998 (Pet.App. 49), amending 35 U.S.C. § 163 to make it more consistent with protections offered to breeders of sexually reproduced plants under the Plant Variety Protection Act Amendments of 1994.

STATEMENT OF THE CASE

The petitioner J.E.M. Ag Supply, Inc. d/b/a Farm Advantage, Inc. (Farm Advantage) is a family owned agricultural supply business located in Belmond, Iowa. (Pet.App. 14.) The other petitioners are distributors for

Farm Advantage. (Pet.App. 14.) Farm Advantage in the 1998 growing season purchased 600 bags of hybrid corn seed produced by the respondent Pioneer Hi-Bred International, Inc. (Pioneer). (Pet.App. 15.) Farm Advantage sold the seed to certain of its farmer customers who then planted the seeds in their fields. (Pet.App. 15.) The purchasing farmers sold the resulting corn crop to the local elevator or used the crop for forage.

Pioneer sued petitioners in a federal district court on the claim of patent infringement. (J.A. 6-11.) Pioneer asserted the hybrid seed corn sold by Farm Advantage was identifiable by the following ten hybrid product numbers: 3394; 3489; 3559; 3730; 34R06; 35N05; 34K77; 35R57; 3563; and 3751. (J.A. 9.) Pioneer further asserted each of these hybrids was the subject of one or more of seventeen utility patents issued to Pioneer (J.A. 9), and which patents are identified in a table of patents submitted in the summary judgment record and also identified in the complaint for patent infringement (J.A. 9). These seventeen utility patents as a group purport to protect certain inbred corn plants, the parts thereof and their seeds and certain hybrid corn plants, the parts thereof and their seeds. (J.A. 9.) The patents were issued to Pioneer between January 21, 1992 and November 18, 1997. (J.A. 9.)

Farm Advantage and its distributors are not licensed sales representatives of Pioneer. (Pet.App. 15.) Pioneer in its suit raises a single claim of patent infringement (J.A. 6-11); no state law claims are asserted and thus there is no issue in this litigation that concerns Pioneer's ability to restrict the number and identity of the sellers of its corn seed products outside of any such right to restrict that may be associated with the patents.

One of the patents-in-suit is no. 5,491,295 (the '295 patent). (J.A. 28.) The '295 patent was issued to Pioneer

on February 13, 1996, and the grant is entitled "Hybrid Corn Plant and Seed." (J.A. 28.) The grant provides in column 7 (J.A. 32):

> This invention includes the hybrid corn seed of 3394, the hybrid corn plant produced from the hybrid corn seed, and variants, mutants, and modifications of 3394.

The grant further provides in column 22 (J.A. 39):

> 1. A hybrid corn plant designated as 3394 and its parts, and having ATCC accession number 97224.
>
> . . .
>
> 6. Seed produced by a hybrid corn plant designated as 3394, said hybrid corn plant having ATCC accession number 97224.

The hybrid corn plants, designated as no. 3394, and that are the subject of the '295 patent are grown by seeds. (J.A. 28.)

The other patents-in-suit that are titled "Hybrid Corn Plant and Seed" each contain language that is the same or to the same effect as the above-quoted provisions from the grant contained in the '295 patent. These patents accordingly purport to protect seed grown hybrid corn plants, the parts thereof and their seeds.

Another of the patents-in-suit is no. 5,506,367 (the '367 patent). (J.A. 40.) The '367 patent was issued to Pioneer on April 9, 1996, and the grant is entitled "Inbred Corn Line PHP38." (J.A. 40.) The grant provides in column 6 (J.A. 43):

> Inbred corn line PHP38 is a yellow, dent corn inbred that provides an acceptable male or female parental line in crosses for producing first generation F1 corn hybrids.

The grant further provides in the same column (J.A. 43):

> Inbred corn line PHP38, being substantially homozygous, can be reproduced by planting

> seeds of the line, growing the resulting corn plants under self-pollinating or sib-pollinating conditions with adequate isolation, and harvesting the resulting seed, using techniques familiar to the agricultural arts.

The plants of the inbred corn line, designated at PHP38, and that are the subject of the '367 patent are grown by seeds. (J.A. 40.)

The other patents-in-suit that are entitled "Inbred Corn Line" each contain language that is the same or to the same effect as the above-quoted provisions from the grant contained in the '367 patent. These patents accordingly purport to protect seed grown inbred corn plants, the parts thereof and their seeds.

The Patent and Trademark Office issued to Pioneer each of the seventeen patents-in-suit under the utility patent provisions of Title 35 of the United States Code, 35 U.S.C. §§ 101-157. (Pet.App. 16.) All of the inbred corn lines identified as subjects of those patents-in-suit that are entitled "Inbred Corn Line" also are subjects of Plant Variety Protection Certificates issued to Pioneer under the provisions of the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321 et seq. (Record transcript of summary judgment hearing, Docket No. 49, at p. 32.)

The tags affixed to the Pioneer hybrid corn seed bags and that were sold by Farm Advantage contain the following statement (J.A. 51):

> The purchase of these seeds includes a limited license under patent(s) [numbers omitted] (pending patent applications) to produce a single corn crop in the United States (or other applicable country). This license does not extend to the use of seed from such crop or the progeny thereof for propagation or seed multiplication. Furthermore, the use of such seed or the progeny thereof for propagation or seed

multiplication or for production or development of a hybrid or different variety of seed is strictly prohibited.

In response to Pioneer's lawsuit, the petitioners raised the defense of patent invalidity. (J.A. 13-14, 16-17.) This defense is based on the position that sexually reproducing plants (*i.e.*, seed grown plants), the parts thereof and their seeds are not included within the scope of the subject matter provision of the utility patent statute, 35 U.S.C. § 101; to the contrary, the petitioners contend that seeds and seed grown plants are exclusively protectable by federal law under the provisions of the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321 et seq. (Pet.App. 16.) Accordingly, in answer to the suit the petitioners raised the following defense (J.A. 13-14):

DEFENSE II – PATENT INVALIDITY

9. The alleged patents listed in the Table of Patents-In-Suit set out in paragraph 13 of the Complaint purport to confer upon Plaintiff Pioneer the right to exclude others from selling, offering for sale, or reproducing the listed hybrids, and the right to exclude others from using the listed hybrids in producing a hybrid or different variety therefrom.

10. The listed hybrids are corn (maize) plant hybrids and the listed patents cover corn hybrids and corn inbreds that reproduce sexually (from seeds).

11. The listed patents are invalid because corn (maize) plants are not patentable subject matter within the scope of 35 U.S.C. § 101.

Farm Advantage and its distributors moved for a complete summary judgment on their defense. (Pet.App. 13.) The district court overruled the motion. (Pet.App. 13-39.) It concluded that a producer of seed corn like Pioneer could receive federal protection of a sexually

reproducing plant variety and its seeds under both the utility patent provisions contained in Title 35 and the PVPA provisions contained in Title 7. (Pet.App. 39 – "At no place in any of the statutes does it say that seed corn plants cannot be given a patent. At no place in the statutes does it say that you cannot have both patent and PVPA protection. At no place in the law does it say that you have to make an election of one or the other, section 101 or the PVPA.") A panel of the Federal Circuit affirmed that ruling following the petitioners' interlocutory appeal. (Pet.App. 1-9.) This Court granted certiorari to review the issue of the source of federal protection of seed grown plants, the parts thereof and their seeds.

SUMMARY OF THE ARGUMENT

Utility patents that are issued to provide federal protection of sexually reproducing corn plant varieties and their seeds are invalid. Seeds, seed grown plants and the parts thereof are not included within the ambit of the utility patent subject matter definitional section, 35 U.S.C. § 101. Rather, federal protection of the corn seed products at issue in this case is exclusively obtainable under the provisions of the Plant Variety Protection Act of 1970 (PVPA) 7 U.S.C. § 2321 et seq. This result is mandated by Congress' express intent stated in the terms of two plant specific statutes and the legislative histories of these enactments. Additionally, dual federal protection of the item at issue, in this case the right to exclude others from reproducing, using or selling sexually reproduced plant varieties, is not allowed. This result is further established by the conflicts that would result if federal protection of seeds and seed grown plants is allowed under both the utility patent statute and the PVPA.

Congress directly stated its intent that seeds and seed grown plants are not subject to federal protection through

the issuance of utility patents. Congress made plain its intent in the language that appears in the two plant specific statutes, and in the statutory language changes made by Congress during its 1952 comprehensive revision and reenactment of the patent statute.

Section 101 of 35 U.S.C. sets forth subjects that can be federally protected through the issuance of utility patents. The language that presently appears in the statute was passed by Congress during its 1952 reenactment of the patent statute. Before that reenactment, the language that now appears in § 101 was contained in the section's immediate precursor, Revised Statutes, § 4886. In 1930, Congress passed and the president signed into law the Townsend-Purnell Plant Patent Act (PPA). The PPA amended the patent subject matter provision, Revised Statutes, § 4886, to include a new category of things subject to patent protection – "plants," but limited only to those plants that are asexually reproduced. Before 1930, § 4886 and its precursors never included the word "plants" in the language defining patentable subject matter. Sexually reproducing plants are those grown by seed. Congress in 1930, when it enacted the PPA, expressly stated its intent that seeds and seed grown plants were not to be included within the ambit of patentable subject matter when it limited the patent rights granted for the new category of "plants" to the right to exclude others from asexually reproducing the patented plant variety.

Congress enacted § 101 as part of the 1952 patent law reenactment. Congress removed only one category of things subject to federal protection by issuance of a utility patent – "plants." Congress provided for patent protection of plants in a new Chapter 15 of Title 35, 35 U.S.C. §§ 161-64, and entitled that chapter "Patents of Plants." Section 101 was entitled "Inventions Patentable." Congress retained the asexual reproduction limitation for

plant patents that originally appeared in § 101's precursor, Revised Statutes, § 4886, as amended by the PPA.

In 1970, Congress passed and the president signed into law the PVPA. This is a comprehensive, stand-alone statute. It deals specifically with federal protection of seeds, seed grown plants and the parts thereof. The statute creates a new agency within the Department of Agriculture, the PVP Office and Board, to administer the statute and to grant federal protection of sexually reproducing plant varieties. Protection is accorded by the grant of certificates of plant variety protection. No allowance is made for dual federal protection through the grant of utility patents. The Patent and Trademark Office is accorded no role under the PVPA to grant federal protection of sexually reproducing plant varieties.

The terms of the plant specific statutes show Congress' intent that federal protection of seeds and seed grown plants is not available through patents. The statutory language is dispositive of the question presented for review. It is not necessary to review any other source to answer the question presented. However, the legislative history of the plant specific acts also establishes that Congress never intended seeds and seed grown plants to be the subject of utility patent protection. The legislative history shows Congress on three occasions (1930, 1968 and 1970) debated the precise issue of whether sexually reproducing plants should be subject to federal protection under the patent laws. On each occasion, Congress determined that seeds and seed grown plants should not be so protected. This is why Congress passed the PVPA – to set forth the precise manner of federal protection that Congress deemed best suited for seeds and seed grown plants.

The PVPA establishes a mechanism for federal protection of sexually reproducing plant varieties that is

inconsistent with the protection accorded to inventors of things subject to utility patents. The standards for granting PVP protection to a plant breeder are specific to seeds and seed grown plants. The utility patent standards are different than the PVPA standards and are specific to those inventions that are properly patentable under § 101. Further, the PVPA permits uses of protected sexually reproducing plant varieties and their seeds that would not be allowed under patent law. The issuance of PVP certificates and utility patents on sexually reproducing plant varieties accordingly would result in impermissible dual federal protection and direct conflicts in the scope of the federal protection granted on the same attribute – the ability to sexually reproduce the plant variety.

ARGUMENT

I.

UTILITY PATENTS ISSUED ON SEXUALLY REPRODUCING PLANT VARIETIES, THE PARTS THEREOF AND THEIR SEEDS ARE INVALID BECAUSE THESE VARIETIES AND SEEDS ARE SUBJECT TO FEDERAL PROTECTION ONLY THROUGH THE ISSUANCE OF CERTIFICATES OF PLANT VARIETY PROTECTION.

A. Background Discussion Of The Issue Raised And The Statutes Involved.

The Federal Circuit panel ruled that a breeder of a sexually reproducing plant variety qualifies for federal protection of the variety, the parts thereof and its seeds under both the utility patent provisions of the general patent statute, 35 U.S.C. §§ 101-157, and the provisions of the Plant Variety Protection Act, 7 U.S.C. § 2321 et seq. *Pioneer Hi-Bred Internat., Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374 (Fed.Cir. 2000), *cert. granted*, ___ U.S. ___, 121 S.Ct. 1077 (2001). Specifically, the panel concluded that

seed grown plants such as the corn inbreds and hybrids at issue in this appeal are included within the ambit of the subject matter section of the utility patent statute, 35 U.S.C. § 101. *Id.* at 1378 ("We conclude that patentable subject matter under 35 U.S.C. § 101 includes seeds and seed-grown plants."). The panel reached this result by reasoning that the scope of § 101 is expansive, and is specifically intended to encompass "anything under the sun that is made by man" including living things such as plants and their seeds. *Id.* at 1375-76 (quoting S. Rep. No. 1979, at 5 (1952)).

The circuit's conclusion defeats the express intent of Congress that is manifested in two plant specific statutes: the Townsend-Purnell Plant Patent Act of 1930 (PPA), Ch. 312, 46 Stat. 376 (codified at 35 U.S.C. §§ 161-64), and the Plant Variety Protection Act of 1970 (PVPA), Pub.L. No. 91-577, § 42, 84 Stat. 1547 (codified at 7 U.S.C. § 2321 et seq.).[1] The utility patents issued under § 101's subject matter provision purport to grant holders rights of exclusion that Congress deliberately chose not to grant when it debated and passed the plant specific statutes.

For example, the Federal Circuit's ruling that upholds the validity of utility patents on seeds and seed grown plants means this conduct constitutes patent infringement: (1) a farmer's act of saving seeds from the patented plants to plant on his own farm in a subsequent growing season; (2) a plant breeding researcher's act of using a patented plant and its seeds in bona fide research

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[1] 7 U.S.C. § 2402(a) provides:

> The breeder of any sexually reproduced or tuber propagated plant variety (other than fungi or bacteria) who has so reproduced the variety . . . shall be entitled to plant variety protection for the variety. . . .

for the purpose of developing a new plant variety[2]; and (3) selling seeds of the patented variety even though that act does not involve further propagation of the variety.[3] Each of these acts is specifically excluded under the PVPA from acts that constitute infringement of the federally protected seed grown plant. 7 U.S.C. §§ 2543-2544.

Further, Congress when it enacted the PVPA established four standards that must be satisfied before a certificate of plant variety protection can be issued that grants the holder the right to exclude others from sexually reproducing a plant variety, or from selling or using a plant variety so reproduced. A plant variety is protectable under the PVPA only if it is judged to be new, distinct, uniform (to a "commercially acceptable" degree) and stable. 7 U.S.C. § 2402. Utility patents on sexually reproducing plant varieties and their seeds are not issued under these four standards. 35 U.S.C. §§ 101-103 (standards to issue a utility patent). Applying the PVPA's standards requires one to make judgments of degree. Congress as part of the PVPA directed that a special agency be created to apply these standards and administer the other carefully drawn plant specific provisions of the PVPA. The Act mandates the creation of the Plant Variety Protection Office and its governing body the Plant Variety Protection Board. 7 U.S.C. §§ 2321, 2323, and 2327. These agencies are within the Department of Agriculture,

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[2] Experimental use of a patented item in connection with the experimenter's business or with the idea of selling the experimental results is infringement under Title 35. *Roche Products, Inc. v. Bolar Pharmaceutical Co., Inc.*, 733 F.2d 858, 862-863 (Fed.Cir.), *cert. denied*, 496 U.S. 856 (1984).

[3] Propagation of a variety means increasing or multiplying the variety to create new seeds of the variety that could compete with the owner's seeds.

which possesses unique expertise over agricultural matters such as seed grown crops. The Act specifies that the Plant Variety Protection Board consist of "experts in various areas of varietal development covered by this chapter", and whose members "shall include farmer representation and shall be drawn approximately equally from the private or seed industry sector and from the sector of government or the public." 7 U.S.C. § 2327. The Federal Circuit panel's ruling judicially imposes the Patent and Trademark Office (PTO) as an agency authorized to grant the right to exclude others from sexually reproducing plants, or selling or using plants so reproduced (by seed), despite the fact that Congress in the plant specific PVPA made no mention of the PTO's filling such a role. The PTO is not within the Department of Agriculture and it lacks the Department's expertise in matters concerning the nation's important cash crops (*e.g.*, corn, soybeans, cotton, wheat). These crops must be seed grown to be commercially valuable because they must be replanted each year following the harvest.

B. Congress Has Directly Spoken On The Scope Of Federal Protection Of Plant Varieties, And It Has Precluded Protection Of Plant Varieties Through The Issuance Of Utility Patents.

The PTO, in *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985), determined that it had authority to issue utility patents to protect seeds and seed grown plants. In *Hibberd*, the PTO board concluded that seed grown plants (in that particular case, corn and its seeds) fell within the subject matter scope of 35 U.S.C. § 101 because the Court in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), supposedly had held that § 101 is to be interpreted to include anything made by man. *Id.* at 444 ("The language of Section 101 has been set forth, supra, and has

been interpreted by the Supreme Court to include everything under the sun that is made by man."). The Federal Circuit based its decision on the same reasoning, when it wrote in *Pioneer*, 200 F.3d at 1375-76:

> The district court held that the Supreme Court in *Diamond v. Chakrabarty*, 447 U.S. 303, 309, 206 USPQ 193, 197 (1980), in stating that "Congress intended statutory subject matter to 'include anything under the sun that is made by man,' " (quoting S.Rep. No. 1979 at 5 (1952)), confirmed that there is no basis in law for excluding living things, in this case seeds and seed grown plants and parts thereof, from the subject matter included in § 101[.]

The "threshold issue [in the present case] is the appropriate framework for analyzing the [PTO's] assertion of authority to" issue utility patents on seed grown plants, the parts thereof and their seeds. *Food and Drug Admin. v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132 (2000). This analysis is governed by the rules set forth in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), because the issue in the present case "involves an administrative agency's construction of a statute that it administers". *Brown & Williamson*, 529 U.S. at 132. The Court must first ask whether Congress has directly spoken to the precise question on review. *Ibid.* If so, the inquiry is at an end because the judiciary must give effect to the unambiguously expressed intent of Congress. *Ibid.* The agency's interpretation of a statute it administers is subject to judicial deference only when "Congress has not specifically addressed the question". *Ibid.* In that situation, the agency's construction will be upheld by a reviewing court if that construction is "permissible." *Ibid.*

This Court consistently has ruled that reviewing courts should not confine themselves to the examination

of a particular statutory provision in isolation when determining whether Congress has addressed the specific subject at hand. The Court in *Brown & Williamson*, 529 U.S. at 132-33, summarized the relevant case authority when it wrote:

> In determining whether Congress has specifically addressed the question at issue, a reviewing court should not confine itself to examining a particular statutory provision in isolation. The meaning – or ambiguity – of certain words or phrases may only become evident when placed in context. See *Brown v. Gardner*, 513 U.S. 115, 118, 115 S.Ct. 552, 130 L.Ed.2d 462 (1994) ("Ambiguity is a creature not of definitional possibilities but of statutory context"). It is a "fundamental canon of statutory construction that the words of a statute must be read in their context and with a view to their place in the overall statutory scheme." *Davis v. Michigan Dept. of Treas.*, 489 U.S. 803, 809, 109 S.Ct. 1500, 103 L.Ed.2d 891 (1989). A court must therefore interpret the statute "as a symmetrical and coherent regulatory scheme," *Gustafson v. Alloyd Co.*, 513 U.S. 561, 569, 115 S.Ct. 1061, 131 L.Ed.2d 1 (1995), and "fit, if possible, all parts into an harmonious whole." *FTC v. Mandel Brothers, Inc.*, 359 U.S. 385, 389, 79 S.Ct. 818, 3 L.Ed.2d 893 (1959). Similarly, the meaning of one statute may be affected by other Acts, particularly where Congress has spoken subsequently and more specifically to the topic at hand. See *United States v. Estate of Romani*, 523 U.S. 517, 530-531, 118 S.Ct. 1478, 140 L.Ed.2d 719 (1998); *United States v. Fausto*, 484 U.S. 439, 453, 108 S.Ct. 668, 98 L.Ed.2d 830 (1988). In addition, we must be guided in a degree by common sense as to the manner in which Congress is likely to delegate a policy decision of such economic and political

magnitude to an administrative agency. Cf. *MCI Telecommunications Corp. v. American Telephone & Telegraph Co.*, 512 U.S. 218, 231, 114 S.Ct. 2223, 129 L.Ed.2d 182 (1994).

That is, each of the acts passed by Congress and enacted into law that deals with the specific issue must be considered to ascertain if Congress has directly spoken as to the particular subject matter. The more recently enacted statutes that deal with the relevant subject can affect the meaning of earlier statutes that also pertain or may be inclusive enough to be construed to pertain to the same subject. In *United States v. Estate of Romani*, 523 U.S. 517, 532 (1998), the Court explained:

> As was the case with the National Bank Act, the Transportation Act of 1920, and the Bankruptcy Act of 1989, the Tax Lien Act is the later statute, the more specific statute, and its provisions are comprehensive, reflecting an obvious attempt to accommodate the strong policy objections to the enforcement of secret liens. . . . Even before the 1966 amendments to the Tax Lien Act, this Court assumed that the more recent and specific provisions of that Act would apply were they to conflict with the older priority statute.

The Court in *Brown & Williamson*, 529 U.S. at 143, employed this same reasoning when it observed:

> At the time a statute is enacted, it may have a range of plausible meanings. Over time, however, subsequent acts can shape or focus those meanings. The "classic judicial task of reconciling many laws enacted over time, and getting them to 'make sense' in combination, necessarily assumes that the implications of a statute may be altered by the implications of a later statute." *United States v. Fausto*, 484 U.S., at 453, 108 S.Ct. 668. This is particularly so where the scope of the earlier statute is broad but the

> subsequent statutes more specifically address the topic at hand. As recognized recently in *United States v. Estate of Romani*, "a specific policy embodied in a later federal statute should control our construction of the [earlier] statute, even though it ha[s] not been expressly amended." 523 U.S. 530-531, 118 S.Ct. 1478.

Congress first directly legislated on the subject of the scope of federal protection for plants in 1930. That is when the PPA was enacted into law. Before this enactment, the definition of useful things subject to patent protection was "any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof . . . ".[4]

This definition was contained in Revised Statutes, § 4886, which was the direct precursor of 35 U.S.C. § 101. The 1930 PPA expanded the definition of useful things subject to patents to include the new category of "plants" by adding to § 4886 the phrase "or who has invented or discovered and asexually reproduced any distinct and new variety of plant . . . "[5].

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[4] This pre-1930 definition of things patentable was largely unchanged from the original patent subject matter provision penned by Thomas Jefferson in 1793. Jefferson was a plant breeder: "[T]he greatest service which can be rendered any country is to add a useful plant to its culture." *The Garden and Farm Books of Thomas Jefferson*, p. 509, Robert C. Baron Ed., 1987. Jefferson's exclusion of "plant" from the definition of things patentable was a conscious omission.

[5] The § 4886 definition of things subject to a utility patent after the 1930 PPA then read in its entirety (Pet.App. 42-3):

> Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct

The PPA expanded the § 4884 rights a patent holder could obtain by adding the words "(including in the case of a plant patent the exclusive right to asexually reproduce the plant) . . . "[6].

Sexual reproduction of plants is reproducing the plants by seed; asexual reproduction of plants is accomplished by budding, grafting, etc., but not by seed.[7]

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and new variety of plant, other than a tuber-propagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor.

[6] The § 4884 rights granted to a patent holder after the 1930 PPA then read in its entirety (Pet.App. 42):

> Every patent shall contain a short title or description of the invention or discovery, correctly indicating its nature and design, and a grant to the patentee, his heirs or assigns, for the term of seventeen years, of the exclusive right to make, use, and vend the invention or discovery (including in the case of a plant patent the exclusive right to asexually reproduce the plant) throughout the United States and the Territories thereof, referring to the specification for the particulars thereof. A copy of the specification and drawings shall be annexed to the patent and be a part thereof.

[7] Asexually reproducing a plant produces offspring with a genetic combination identical to that of the single parent. Thus, a plant produced by asexual reproduction is a genetic clone of the original parent plant. Sexual reproduction produces

Congress in passing the plant-specific PPA expressly stated its intent that the words "art, machine, manufacture, or composition of matter" appearing in the precursor to § 101 did not include "plants", and that a patent issued on a "plant" conferred only the right to exclude others from asexually reproducing the plant. If the patent laws before 1930 allowed patents on "plants" then there would have been no reason for Congress to have passed the 1930 PPA and to have limited the scope of plant patent protection to plants reproduced by asexual methods.

Congress next addressed the subject of the scope of federal protection of plants in 1952. This was in conjunction with Congress' comprehensive revision of the general patent statute, and its resulting reenactment of the patent statute contained in Title 35 of the United States Code. In the reenactment, Congress moved the plant patent provisions into a separate Chapter 15 of Title 35 named "Patents for Plants". (35 U.S.C. §§ 161-64.) The 1952 Congress placed the definition of useful things other than "plants" that are patentable in 35 U.S.C. § 101 and gave that section the title "Inventions Patentable". Chapter 15 continued to limit plant patents to the right to exclude others only from asexually reproducing the patented plant and parts thereof. 35 U.S.C. § 161. The protection did not extend to seeds. *Ibid.* None of this legislative effort that culminated with the enactment of the 1952 Patent Act makes sense if Congress intended that § 101 authorized issuance of patents on plant varieties that

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offspring with a genetic combination different than that of either of the two parents, resulting in a plant variety consisting of a range of genetic combinations. *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567-1568 (Fed.Cir. 1995), *cert. denied*, 518 U.S. 1018 (1996).

confer on the patent holder the right to exclude others from sexually reproducing a patented plant variety.

Specifically, the 1952 Congress would not have moved the word "plant" out of § 101 and into Chapter 15 and maintained the asexual reproduction limitation if it intended that § 101 would authorize patents on plants granting the right to exclude others from sexually reproducing plants. If the 1952 Congress had intended § 101 to allow protection of sexually reproducing plants (seeds and seed grown plants), then it would have said so, as it did in 1930 with regard to protecting plants reproduced by asexual methods. The PTO board in *Hibberd* and the Federal Circuit panel in *Pioneer* ignored the express words of the statutes (§§ 101, 161 and 163 of Title 35) and judicially amended them by injecting into § 101 language pertaining to plants that does not appear in Congress' reenactment of that section (from Revised Statutes, § 4886) and never had appeared in any of § 101's precursors.

Congress for a third time specifically passed legislation on the subject of the scope of federal protection of plants. This occurred in 1970 when the PVPA was enacted into law. The PVPA, 7 U.S.C. § 2321 et seq., is a comprehensive, stand-alone statute. Its exclusive subject matter is the scope of federal protection of plant varieties and includes federal protection of seeds, seed grown plants and the parts thereof. The PTO is accorded no role whatsoever over the grant of federal protection under this comprehensive act. Nor are the utility patent standards contained in Title 35 incorporated into the PVPA. To the contrary, the PVPA establishes a newly created agency within the Department of Agriculture to administer the grant of federal protection of seeds and seed grown plants, the Plant Variety Protection Office and that Office's governing body the Plant Variety Protection

Board. 7 U.S.C. §§ 2321, 2323 and 2327. A method is provided for the judicial review of the office's and board's decisions on whether to grant an applicant a certificate of plant variety protection for seeds and seed grown plants. *Id.* at §§ 2461-2462. Federal protection is accorded by the issuance of this certificate. *Id.*, at §§ 2481, 2483.

The express terms of the PVPA include federal protection against *any* type of multiplication of the variety, not just sexual reproduction, with one exception. The only other type of federal protection carved out of the PVPA's otherwise all encompassing sweep is the PPA. The PVPA infringement provision sets out "Acts constituting infringement", 7 U.S.C. § 2541(a)(1)-(8), and then at 7 U.S.C. § 2541(a)(9) provides it also is infringement to "perform any of the foregoing acts in instances where the variety is multiplied other than sexually, except in pursuance of a valid United States plant patent . . . ". Thus, the PVPA covers all federal protection of any method of multiplying a protected variety except for the PPA carveout.

This Court explained the purpose and function of the PVPA in *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 181 (1995):

> In 1970, Congress passed the Plant Variety Protection Act (PVPA) 84 Stat. 1542, U.S.C. § 2321 et seq., in order to provide developers of novel plant varieties with "adequate encouragement for research, and for marketing when appropriate, to yield for the public the benefits of new varieties." § 2581. The PVPA extends patent-like protection to novel varieties of sexually reproduced plants (that is, plants grown from seed) which parallels the protection afforded asexually reproduced plant varieties (that is, varieties reproduced by propagation or

grafting) under Chapter 15 of the Patent Act. See 35 U.S.C. §§ 161-64.

The developer of a novel variety obtains PVPA coverage by acquiring a certificate of protection from the Plant Variety Protection Office. See 7 U.S.C. §§ 2421, 2422, 2481-2483. This confers on the owner the exclusive right for 18 years [now 20 years, again paralleling the duration of protection for plant patents under Title 35] to "exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing (as distinguished from developing) a hybrid or different variety therefrom." § 2483.

Federal protection of seeds and seed grown plants under the PVPA conflicts with federal protection of sexually reproducing plant varieties under the utility patent provisions of Title 35. Some of the principal conflicts include:

1) research exemption, 7 U.S.C. § 2544 [Pioneer tag prohibits research (J.A. 51)];

2) crop saving exemption, 7 U.S.C. § 2543 [Pioneer tag prohibits crop saving (J.A. 51)];

3) standards rendering a plant variety protectable – new, distinct uniform (to a "commercially acceptable" degree) and stable, 7 U.S.C. § 2402;

4) protection extends to an "essentially derived variety" but not to all varieties derived from the protected variety, 7 U.S.C. §§ 2401(a)(3) and 2541(c)(1);

5) establishment of a special office, the plant Variety Protection Office, to administer the PVPA, 7 U.S.C. §§ 2321 and 2323;

6) establishment of the Plant Variety Protection Board consisting of "experts in various areas of varietal development covered by this

chapter", which "shall include farmer representation and shall be drawn approximately equally from the private or seed industry sector and from the sector of government or the public", 7 U.S.C. § 2327;

7) acts of infringement of a PVP certificate include:

(a) sexually multiplying the variety "as a step in marketing (for growing purposes) the variety" [not for research to develop a new variety], 7 U.S.C. § 2541(a)(3);

(b) using the variety "in producing (as distinguished from developing) a hybrid or different variety therefrom", 7 U.S.C. § 2541(a)(4) [Pioneer tag states "use . . . for . . . development of a hybrid or different variety of seed is strictly prohibited." (J.A. 51)]; and

(c) performing any of the infringing acts specified in § 2541(a) "even in instances in which the variety *is multiplied or other than sexually, except in pursuance of a valid United States plant patent*" (emphasis supplied), 7 U.S.C. § 2541(a)(9);

8) infringement does not include performing any act concerning propagating material of any kind of a protected variety that is sold or otherwise marketed with the consent of the owner in the United States *"unless the act involves further propagation of the variety"* (emphasis supplied), 7 U.S.C. § 2541(d); and[8]

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[8] Propagation of a plant variety is multiplying or increasing the variety to create new seeds of the variety. An act not involving propagation of a protected variety does not result in creating new seeds of the variety that can be sold or used in competition against the original breeder. *See*, 7 U.S.C. § 2541(d).

9) no damages can be recovered against an infringer without proving actual knowledge unless a protected variety's container is labelled "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited", 7 U.S.C. § 2567 [Pioneer's tag contains patent warnings but not these specific and prominent PVPA notices (J.A. 51).]

Two amendments to Title 35 have specifically addressed the PVPA. First, the 1984 amendments to Chapter 18, Pub.L. 98-620, Title V, § 501(1) and (2), 99 Stat. 3335, amended §§ 201(d) and (e) of Chapter 18 of Title 35. Chapter 18 of Title 35 deals with rights of those who create with assistance from federal funds "any invention or discovery which is or may be patentable or otherwise protectable under this title or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.)." 35 U.S.C. § 201(d). Section 201(e) provides:

> (e) The term "subject invention" means any invention of the contractor conceived or first actually reduced to practice in the performance of work under a funding agreement: Provided, that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act (7 U.S.C. 2401(d))) must also occur during the period of contract performance.

The 1984 amendments added the clauses in §§ 201(d) and (e) referencing the PVPA and made clear that under Chapter 18 the PVPA controls the date of determination for a plant variety.

Second, the PPA was amended by the Plant Patent Amendments Act of 1998, Pub.L. 105-289, 112 Stat. 2780, which provides in § 2(b):

> (b) PURPOSES. – The purposes of this Act are –
>
> (1) to clearly and explicitly provide that *title 35 United States Code*, protects the owner of a plant patent against the unauthorized sale of plant parts taken from plants illegally reproduced. [Emphasis added]
>
> (2) to make the protections provided *under such title* more consistent with those provided breeders of sexually reproduced plants under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.), as amended by the plant Variety Protection Act Amendments of 1994 (Public Law 103-349) . . . [Emphasis added]

Section 3(a) of the Plant Patent Amendments Act of 1998 amended 35 U.S.C. § 163 and provides:

> § 163. Grant
>
> In the case of a plant patent, the grant shall include the right to exclude others from asexually reproducing the plant, and from using, offering for sale, or selling the plant so reproduced, or any of its parts, throughout the United States, or from importing the plant so reproduced, or any parts thereof, into the United States.

It can be seen that when Congress decided to make it clear that plant protection afforded under Title 35 included protection of plant parts as the PVPA provided, Congress only amended § 163 of the PPA. There was no

amendment to § 101 because none was needed since § 101 does not afford protection to plant varieties.

A reference to foreign applications for plant breeder's rights occurs at 35 U.S.C. § 119(f) (Pub.L. 106-113, Nov. 29, 1999, Consolidated Appropriations Act of 2000, Subtitle H – Miscellaneous Patent Provisions, § 4802), which provides: "Applications for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications for patents . . . " Subsections (a) through (c) allow a U.S. patent applicant to use the date of a filing in a foreign country as the effective date of the U.S. filing if the U.S. patent application was filed within twelve months of the foreign filing. 35 U.S.C. § 119(f) has no bearing on the issue before the Court. The text of subdivision (f) does not address the issue of whether § 101 should be amended to return the word "plants" to the statutory text, nor does the subsection specifically address either of the plant-specific acts, the PPA and the PVPA. An isolated amendment tacked on the end of a lengthy, multi-subject revenue bill, and inserted among "miscellaneous patent provisions", is hardly evidence that Congress focused on the issue of whether the PVPA is the exclusive federal statutory means of gaining protection for sexually reproduced plant varieties. *See, Chakrabarty*, 447 U.S. at 314 ("In any event, absent some clear indication that Congress focused on [the] issues . . . directly related to the one presently before the Court, . . . there is no basis for reading into its actions an intent to modify the plain meaning of the words found in § 101 . . . "); and the dissent of Justice Stevens in *Sorensen v. Secretary of the Treasury*, 475 U.S. 851, 867, n. 2 (1986) (pointing out that

isolated provisions in omnibus revenue bills do not sit atop the pinnacle of Congressional awareness, e.g., the Omnibus Budget Reconciliation Act of 1981 contained "a name and phone number – 'Ruth Seymour', 225-4844 – standing alone as if it were a special appropriation item.")

Thus, when Congress has explicitly addressed the PVPA in Title 35 statutory text, it has done so in the context of a statutory scheme that does not include plant varieties within § 101 patentable subject matter. The words of the statutory text of 35 U.S.C. § 119(f) do not show Congressional awareness of a statutory scheme different than that clearly expressed in the text of the 1930 PPA, the 1952 Patent Act, and the 1970 PVPA.

The PVPA is the most recent statute passed by Congress that deals with the precise subject of the scope of federal protection for seeds and seed grown plants. It is the statute that should control the Court's construction of the earlier enacted statutes that deal with the subject of the federal protection of plants, the 1930 PPA and the 1952 comprehensive revision and reenactment of the patent statute. *Romani*, 523 U.S. at 530-31 ("a specific policy embodied in a later federal statute should control our construction of the [earlier] statute, even though it ha[s] not been expressly amended"). The comprehensive PVPA is designed to provide federal statutory protection for plant varieties that require use of sexual reproduction (by seed) to be commercially viable. It is not realistic to contend that the 1970 Congress would carefully construct a complex and specialized statute like the PVPA for the purpose of covering a particular class of plants and their seeds and accord not a scintilla of its attention to 35 U.S.C. § 101 if Congress in fact had ever intended § 101 to authorize patents on sexually reproducing plant varieties.

To now administratively and judicially create such a § 101 (utility) patent on "plants" amounts to legislation that overrides the 1930 PPA, the 1952 Patent Act and the 1970 PVPA. This is not agency and judicial construction of a Congressional enactment – it is Article II and Article III bodies usurping Congress' Article I authority to pass legislation. The PTO's administrative agency "[c]onstruction [of a statute it administers] may not be substituted for legislation." *United States v. Missouri Pac. R. Co.*, 278 U.S. 269, 278 (1929).

C. The PTO And Federal Circuit Ignored The Language Congress Used In The Relevant Statutes Themselves And Instead Relied On An Erroneous Reading Of Legislative History To Conclude That Utility Patents Could Be Issued To Provide Federal Protection Of Seeds And Seed Grown Plants.

The PTO board and Federal Circuit panel each ignored the language Congress used in the plant specific statutes of 1930, 1952 and 1970. Instead, they relied on an erroneous reading of legislative history to conclude that § 101's subject matter reach literally extended to "anything under the sun that is made by man." *Hibberd*, 227 U.S.P.Q. at 444; *Pioneer*, 200 F.3d at 1376. The phrase "anything under the sun" does not appear in § 101, and Congress never has written the quoted phrase into actual legislation.

The source of the "anything under the sun" phrase is Sen. Rep. No. 82-1979, 82nd Cong., 2nd Sess., 1952 WL 3180 (Leg.Hist.), issued in connection with Congress' 1952 reenactment of the patent statute. The quotation relied on by the board and panel must be read in its entirety and in its original context in the legislative reports. The full and correct statement is: "A person may

have 'invented' *a machine or a manufacture*, which may include anything under the sun that is made by man . . . " (Emphasis added). Sen. Rep. No. 82-1979, 1952 WL 3180, p. 3 (Leg.Hist.) (the Senate Report repeats the substance of the House Report). The report here was addressing "a machine or manufacture".[9]

The very next page (1952 WL 3180, p. 4 (Leg.Hist.)) of the Senate Report specifically addresses "plants": "Chapter 15 collects the provisions relating to plant patents . . . " At 1952 WL 3180, p. 10, the Senate Report provides: "Section 101 follows the wording of the existing statute [*i.e.*, Revised Statutes, § 4886] as to the subject matter for patents, except that reference to plant patents has been omitted for incorporation in section 301 [35 U.S.C. § 161] . . . " (See also 1952 WL 3180, p. 11, of the Senate Report moving the relaxed written description requirement for "plants" to the new Chapter 15, 35 U.S.C. §§ 161-64.)[10] Thus, when read in the context of the

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[9] It was not addressing a plant, which unlike a machine or manufacture is replicated if the plant's DNA is protected as the plant grows and as its seeds are stored.

[10] To permit the patenting of asexually reproduced plants in 1930, Congress was required to relax the written description requirement of Revised Statutes, § 4888. The PPA amendments of the utility patent statute accordingly provided (Pet.App. 43):

> Section 4888 of the Revised Statutes, as amended (U.S.C., title 35, sec. 33), is amended by adding at the end thereof the following sentence: "No plant patent shall be declared invalid on the ground of noncompliance with this section if the description is made as complete as is reasonably possible."

After the 1952 reenactment, the written description requirement for utility patents was placed in 35 U.S.C. § 112. The relaxed written description requirement for plant patents was moved to 35 U.S.C. § 162. There presently is no relaxed written description allowed for a utility patent.

original source document, the committee report's phrase "anything under the sun that is made by man" was not intended by Congress to have the effect decades later of rewriting the utility patent subject matter provision to once again include "plants" and this time do so without the original asexual reproduction limitation.

Both the PTO board and Federal Circuit panel said the Court's analysis in *Chakrabarty* supported the conclusion that § 101 should be read to include within the subject matter of utility patents "anything under the sun that is made by man." *Hibberd*, 227 U.S.P.Q. at 444; *Pioneer*, 200 F.3d at 1367. The Court in its *Chakrabarty* decision did not state, let alone even intimate, that an agency and reviewing court should select a snippet of a

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An asexually reproduced plant is a genetic clone of its parent. In contrast, a seed grown plant contains a range of genetic combinations which are not identical to the genetic combination of either of its parents. *Imazio Nursery*, 69 F.3d at 1567-68. Further, without the ability to actually grow, breed and otherwise use the plant variety in a research environment, all of the information contained in the plants and seeds of the variety is not available and thus has not been disclosed.

This difference is addressed in the PVPA's disclosure provision. Specifically, the Plant Variety Protection Office requires, in exchange for issuance of a Plant Variety Protection Certificate on a corn hybrid, that the identities of the inbred parents that are cross-pollinated to make the hybrid are disclosed, that seed of the inbred parents is deposited, and that the breeding history of each of the inbred parents is detailed (See 7 U.S.C. § 2422(1) and 7 C.F.R. § 97.6(d).) Also, research with a protected variety is allowed. 7 U.S.C. § 2544.

The PTO in issuing the corn hybrid patents disputed in this case did not require disclosure of any of this information and therefore one skilled in the art of plant breeding would not be able to recreate the patented corn hybrids.

sentence from the legislative history of a statutory reenactment like the 1952 Patent Act and use that snippet to rewrite a provision of the Act like § 101.

At issue in *Chakrabarty* was whether a live, human-made micro-organism (a genetically altered oil-eating bacterium) could be the subject of a utility patent. 447 U.S. at 305. The *Chakrabarty* dissent argued that the enactments of the PPA and PVPA showed Congress' intent that *no* living organism, genetically engineered or otherwise, could be patented under 35 U.S.C. § 101. *Chakrabarty*, 447 U.S. at 319-322 (Brennan, J., dissenting). The majority in *Chakrabarty* countered that the passage of these plant-specific acts did not evidence Congress' intent that § 101 could never cover *any* form of a living thing, such as a genetically altered bacterium. *Id.* at 311-314. A bacterium is specifically excluded from coverage within the PVPA, and thus is not subject to federal protection under that act. 7 U.S.C. § 2402(a). Importantly, the *Chakrabarty* majority agreed with the dissent that not all genetically altered or engineered living organisms were the proper subjects of utility patent protection. The majority observed that Congress can express its intent to exclude from § 101's subject matter reach a living organism created, modified or altered by genetic engineering in either of the following two ways:

> Congress is free to amend § 101 so as to exclude from patent protection organisms produced by genetic engineering. Cf. U.S.C. § 218(a), exempting from patent protection inventions "useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon." Or it may choose to craft a statute specifically designed for such living things. But, until Congress takes such action, this Court must construe the language of § 101

> as it is. The language of that section fairly embraces respondent's invention.

447 U.S. at 318.

In the case of seeds, seed grown plants and the parts thereof *Congress has done both*. In enacting the 1930 PPA, Congress specifically expanded the scope of § 101's precursor, Revised Statutes § 4886, to include for the first time "plants", but limited the expansion to plants that are reproduced by asexual methods. Congress in 1952 when it drafted § 101 specifically refused to include the category of "plants" within the subject matter of utility patents; instead, it placed the provisions governing plant patents in a separate Chapter 15 of Title 35. Congress later passed a comprehensive law, the 1970 PVPA, that is specifically designed to provide federal protection of seed grown plants, the parts thereof and their seeds. The Federal Circuit's approval of the granting of utility patent protection over sexually reproduced plant varieties is in direct conflict with (1) Congress' decision not to include sexual reproduction of plants in the 1930 PPA, (2) Congress' 1952 decision to exclude "plants" from § 101, (3) Congress' enactment of the 1970 PVPA and (4) the Supreme Court's analysis in *Chakrabarty*.

The fact that the phrase "anything under the sun that is made by man" was not intended to include "plants" certainly was apparent to Judge Giles Rich when he authored the opinion in *Application of Bergy*, 596 F.2d 952 (Cust. & Pat.App. 1979), *affd. sub nom., Diamond v. Chakrabarty*, 447 U.S. 303 (1980). Before he became a federal judge, Judge Rich was a respected patent law attorney who testified before Congress during the hearings on the 1952 reenactment of the Patent Act; he later had a distinguished career as a judge sitting on the Federal

Circuit and its predecessor court. In *Bergy*, Judge Rich noted in 596 F.2d at 987:

> The terms [of § 101] are broad: "any *** manufacture, or composition of matter." If we had any doubt about the propriety of giving those words a broad interpretation, it would be dispelled by the identical statement in the House and Senate reports accompanying the 1952 reenactment, quoted supra, that "a machine, or a manufacture *** may include *anything under the sun that is made by man.*" (Emphasis ours.)[25]

Judge Rich made clear at note 25 that neither the underscored phrase plucked from legislative history, nor the text of § 101, was intended by the 1952 Congress to include "plants":

> We recognize that, at the time the statement was made, its authors realized that Congress did not intend the term "manufacture" in § 101 to include plants, which were specifically provided for elsewhere. It is with this in mind that we take the quoted statement as an expression of congressional will that the term "manufacture" otherwise be given the broadest possible interpretation.

Id. at 987, n. 25.

The Federal Circuit handed down its *Pioneer* ruling before this Court issued its decision in *Brown & Williamson, supra*, 529 U.S. 120. In *Brown & Williamson*, the majority held the FDA did not have authority under its enabling statute to promulgate and enforce certain regulations intended to reduce tobacco consumption among children and adolescents. One basis relied on by the majority was the fact that Congress had "enacted six separate pieces of legislation since 1965 addressing the problems of tobacco use and human health." *Id.* at 143.

This incremental legislation included restrictions on tobacco advertising and the sales of tobacco products to minors, which restrictions were similar in subject and scope to the challenged regulations promulgated by the FDA. *Id.* at 144. Given these legislative enactments and the FDA's historical position that it lacked regulatory authority over tobacco products, the majority concluded: "Congress has created a distinct regulatory scheme to address the problem of tobacco and health, and that scheme, as presently construed, precludes any role for the FDA." *Ibid.*

The PTO board issued its *Hibberd* ruling in 1985. This is 55 years after the enactment of the PPA and 15 years after the enactment of the PVPA. Unlike the tobacco specific legislation involved in *Brown & Williamson*, the plant specific acts are comprehensive – the PPA now appears in a separate chapter of Title 35 and the PVPA is a stand-alone statute that is contained in Title 7. That statute establishes a special agency within the Department of Agriculture to grant federal protection to breeders of novel varieties of sexually reproduced plants and their seeds – the PVP Office and the PVP Board. Accordingly, the case against the PTO for authority to issue utility patents to protect seeds and seed grown plants is much stronger than the case against the FDA to regulate the marketing and sale of tobacco products to minors. Congress legislated comprehensively when it addressed the scope of federal protection of plants (PPA and PVPA), and it specifically stated which agency had authority to issue the grant of federal protection – the PTO for asexually reproduced plants under the plant patent provisions of the general patent statute, 35 U.S.C. §§ 161-64, and the PVP Office and PVP Board for seeds

and seed grown plant varieties under the provisions of the PVPA, 7 U.S.C. § 2321 et seq.

The *Brown & Williamson* dissent took issue with the majority's statutory construction analysis on the basis that the incremental tobacco specific legislation did not contain "a no jurisdiction assumption." *Brown & Williamson*, 529 U.S. at 182 (Breyer, J., dissenting). Specifically, the dissent argued "the subsequent legislative history" of the six tobacco specific acts "is critically ambivalent" on whether Congress intended to divest the FDA of whatever jurisdiction it may have had but historically never exercised over tobacco product marketing and sales to minors. *Ibid.* There is no such similar ambiguity with regard to the granting of federal protection of seeds and seed grown plants.

First, the legislative history is not "critically ambivalent" as to Congress' intent on assigning agency jurisdiction to grant federal protection over seeds and seed grown plants. This history is detailed in the next subdivision of this brief.

Second, and more important, Congress in the plant specific statutes themselves *expressly assigned agency jurisdiction for the granting of federal protection over plants.* In 1930 and 1952, Congress expressly stated in legislation that the PTO could issue patents on plants ("plant patents") but limited to those plants that are reproduced asexually. In 1970, Congress expressly stated in legislation that the PVP Office and PVP Board of the Department of Agriculture could issue patent-type protection (through PVP certificates) for seeds and seed grown plants. Congress gave the PTO no jurisdiction in any of these plant specific statutes to issue utility patents (or, for that matter, plant patents) on seeds and seed grown plants.

Imagine how the *Brown & Williamson* case would have been much simpler to decide had Congress passed and the president signed into law an enactment that comprehensively regulated the marketing and sale of tobacco products to minors and children. Imagine further that this enactment established a special agency within the Health and Human Services Department that was charged with responsibility to issue implementing regulations and administer the provisions of this comprehensive statute. Call this special agency the Tobacco Regulatory Administration (TRA). Assume further this enactment made no provision for the FDA's filling any role in the tobacco regulatory scheme. The later enacted comprehensive tobacco specific legislation would control over the earlier enacted and less specific FDA's general enabling statute. *Romani*, 523 U.S. at 530-31. The FDA could not regulate tobacco product marketing and sales to minors under this fact scenario, even applying the analysis of the *Brown & Williamson* dissent. Congress would have specifically expressed its intent to divest the FDA from a role when, through the enactment of subject matter specific legislation, it made the jurisdictional grant to the TRA.

This hypothetical case is, of course, almost the exact fact pattern presented in the present appeal. Only the present appeal has an additional fact that makes this case even stronger than the TRA hypothetical case. Here, Congress did make a jurisdictional grant on the specific subject to the PTO, but limited the grant to the PTO's issuing patents to protect plants that are reproduced by *asexual* methods. Congress by plant specific legislation accorded jurisdiction in a specially created agency, the PVP Office and Board, to administer the grant of federal protection

of seeds and seed grown plants. Congress made no provision for the PTO to exercise jurisdiction over this same subject. To the contrary, Congress in 1930 and again in 1952 specifically limited the scope of the PTO's jurisdictional grant to plants that are reproduced asexually.

D. The Legislative History Of The Plant Specific Acts Further Demonstrates Congress' Stated Intent That Sexually Reproduced Plant Varieties And Their Seeds Are Subject To Federal Protection Only Under The PVPA.

Because the PTO board and Federal Circuit panel relied on legislative history to conclude utility patent protection exists for seeds and seed grown plants, the petitioners set forth the relevant legislative history of the plant specific enactments. This history demonstrates Congress' intention, as stated in the terms of the plant specific statutes themselves, that federal statutory protection of seeds and seed grown plants is exclusively available under the PVPA.

The petitioners maintain the first and foremost source of authority for Congressional intent is the terms of the plant specific statutes themselves. For the reasons discussed in subdivisions I.B and C of this brief, those terms are not ambiguous. Congress specifically indicated its intent in the language of the statutes that federal protection of sexually reproducing plant varieties is exclusively available under the PVPA. An excursion into legislative history, while perhaps diverting, is not necessary let alone essential to decide this case. The PTO's *Hibberd* ruling and the Federal Circuit's *Pioneer* opinion illustrate that primary reliance on legislative history over the language Congress used in the statutes themselves can be tricky business. This is particularly so when a part

of a single sentence appearing in the legislative reports ("anything under the sun") is ripped out of its context and then isolated unto itself as the ultimate manifestation of Congress' actual intent.

The Senate Committee on Patents Report on the PPA provides:

> I. Purposes of the Bill
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> The purpose of the bill is to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry, and thus assist in placing agriculture on a basis of economic equality with industry. The bill will remove the existing discrimination between plant developers and industrial inventors. To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that is by grafting, budding, cuttings, layering, division, and the like, *but not by seeds*. [Emphasis added]

Senate Report No. 315, Calendar 307 [To Accompany S. 4015], 71st Congress, April 2, 1930, p. 1. Senate Report No. 315 further provides at page 4 that the purpose of the PPA was to grant a limited form of protection:

> On the other hand, it does not give any patent protection to the right of propagation of the new variety by seed, irrespective of the degree to which the seedlings come true to type.

Five years before the enactment of the 1970 PVPA, a presidential commission was appointed to work with Congress to review the operation of the United States patent system. Eighteen months were spent accomplishing this review. Patent Law Revision Hearings, Subcommittee on Patents, Trademarks, and Copyrights, Senate

Judiciary Committee, 90th Cong., 2nd Sess., 1968, Part 3. p. 648. One recommendation of the presidential commission was that all provisions in the patent statute for plant patents be deleted. *Id.*[11] The Department of Agriculture opposed a proposed amendment to expand the coverage of 35 U.S.C. §§ 161-64, the plant patent provisions, to include patent protection for seeds and seed grown plants. *Id.* at 716.[12] These references are offered only to remind us of the extent of the continuing political debate that preceded the passage of the 1970 PVPA. Congress at this time once again considered the precise issue of whether patents should be issued to provide federal protection of seeds and seed grown plants. Congress again concluded seeds and seed grown plants should not be the subject of patent protection. Ultimately the interest groups involved in the debate received a political resolution of their positions by way of the passage of the PVPA. It is exactly this type of debate that is circumvented by the administrative and judicial amendment of § 101 that

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[11] The record of the 1968 Patent Law Revision Hearings, *supra*, provides at Part 3, p. 648:

> While the commission acknowledges the valuable contribution of plant breeders, it does not consider the patent system the proper vehicle for the protection of such subject matter regardless of whether the plants reproduce sexually or asexually.

[12] The Department of Agriculture's statement at Part 3, p. 716, of the 1968 Patent law Revision Hearings, *supra*, reads:

> Our second ground of objection to the proposed amendment stems from the fundamental differences between vegetative or asexual reproduction of plants and the reproduction of plants by seed. It is also because of these differences that patenting can be a satisfactory medium only for the protection of asexually reproduced plants.

reinserts "plants" without the asexual reproduction limitation imposed by Congress since 1930 when it first legislated on the precise issue.

When Congress passed the PVPA it declared its intent that Title 35 did not confer patent protection that covered the sexual reproduction of plant varieties when it stated at page 1 of House Report No. 91-1605, 91st Cong., 2nd Sess. 1970, U.S.C.C.A.N. 5082, October 13, 1970, under "Purpose":

> Under patent law, protection is presently limited to those varieties of plants which reproduce asexually, that is, by such methods as grafting or budding. No protection is available to those varieties of plants which reproduce sexually, that is, generally by seeds. Thus, patent protection is not available with respect to new varieties of most of the economically important agricultural crops, such as cotton or soybeans.

The 1970 PVPA Senate Judiciary Committee's Report No. 91-1246 likewise indicates that Title 35 did not provide protection for sexually reproducing plant varieties and their seeds. The report further notes Congress again specifically determined that patent protection of sexually reproducing plant varieties was not appropriate, and that federal protection instead should be granted under the provisions of the newly drafted PVPA. Senate Report No. 91-1246 provides at pp. 2-3:

> During the hearings by this committee's Subcommittee on Patents, Trademarks, and Copyrights on the legislation providing for a general revision of the patent laws, consideration was given to an amendment of the plant patent section of the patent law. Under the patent law, patent protection is limited to those varieties of plants which reproduce asexually, that is, by such methods as grafting or budding.

> No protection is available to those varieties of plants which reproduce sexually, that is, generally by seeds. Thus, patent protection is not available with respect to new varieties of most of the economically important agricultural crops, such as cotton or soybeans. The Patent Subcommittee conducted hearings on February 1, 1968, on an amendment to broaden the scope of plant patent protection so as to apply to sexually reproduced plants. A number of objections to this proposal were advanced during the hearings, and no further action in that area has been taken by the subcommittee.
>
> Subsequently, legislation was introduced to encourage the development of novel varieties of sexually reproduced plants by the issuance of certificates of plant variety protection by the Department of Agriculture. S. 3070, to establish such protection, was reported by the Committee on Agriculture and Forestry, and on August 24 this legislation was referred to this committee for the purpose of reviewing its impact on the plant patent statute. The committee accordingly has examined S. 3070 and finds that it does not alter protection currently available within the patent system. The committee recommends the bill, S. 3070, favorably as amended.[13]

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[13] The PTO board in *Hibberd* committed another obvious error on the legislative history when it relied on a partial sentence from the excerpted Senate Report No. 91-1246 to conclude that Congress actually had expressed its intent that seeds, seed grown plants and the parts thereof are patentable under § 101. Specifically, the board in *Hibberd* wrote in 227 U.S.P.Q. at 445:

> The examiner does not refer to the legislative histories of the plant-specific Acts to support his position as to the intent of Congress. Rather, he

This legislative history is unmistakable. The PVPA was enacted because sexually reproducing plant varieties

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merely asserts, e.g., at page 2 of his answer, that " . . . it is clear that congress intended a 'distinct and new variety of plant' covered by the plant Patent Act to be something apart from the statutory categories of invention embraced by Section 101" and at page 3 " . . . the only reasonable statutory interpretation is that each [PPA and PVPA] carved out from Section 101, for specific treatment, the subject matter covered by each." However, as noted by appellants at page 17 of their brief, there is nothing in the legislative histories of the plant-specific Acts from which one could conclude that Congress intended to remove from protection under Section 101 any subject matter already within the scope of that section. Rather, the Senate committee on the Judiciary concluded on September 29, 1970 in its Report on Senate bill S.3070 in which it recommended passage of the Plant Variety Protection Act that " . . . it does not alter protection currently available within the patent system."

This paragraph demonstrates that the PTO board in *Hibberd* either never looked at the full text of the legislative reports or totally misunderstood them if it did look. The former is most likely. The *Hibberd* excerpt suggests the board, for recitation of the legislative history, entirely relied on the brief of a seed producer. This producer was the patent applicant and obviously wanted sexually reproducing plants to be the subject of utility patents. The *Hibberd* board simply assumed the partial quote from the report was contextually accurate, when in fact it patently was not. The full text of the Senate report, set forth in the text of this brief, shows that the PVPA "does not alter the protection currently available within the patent system" because seeds and seed grown plants were not and had never been included within the scope of patentable subject matter. Only plants reproduced by asexual methods were then patentable, under the provision of the 1930 PPA that amended the precursor of § 101 (Revised Statutes, § 4886) to include this category of plants.

and their seeds were not and had never been intended by Congress to be included within the classes of things patentable under Title 35.

E. The PTO And Federal Circuit's Interpretation Of § 101 Is Not Permissible Because Allowance Of Utility Patents And PVP Certificates On Seeds And Seed Grown Plants Results In Conflicting Federal Protection.

In subdivision I.B of this brief, the petitioners summarize as examples nine separate ways in which the issuance of both utility patents and PVP certificates on seeds and seed grown plants results in conflicts. The conflicts are direct. For example, the PVPA permits (a) a farmer to save seed from the protected plant variety to replant on his own farm in subsequent growing seasons, 7 U.S.C. § 2543, and (b) a plant breeder to conduct bona fide research on a protected plant variety and its seeds in order to produce a new variety subject to federal protection, *id.* at § 2544.[14] Each of these acts constitutes

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[14] These sections of the PVPA, appearing in 7 U.S.C., provide (Pet.App. 48):

2543. Right to save seed; crop exemption

Except to the extent that such action may constitute an infringement under subsection (3) and (4) of section 2541 of this title, it shall not infringe any right hereunder for a person to save seed produced by the person from seed obtained, or descended from seed obtained, by authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on the farm of the person, or for sale as provided in this section. A bona fide sale for other than reproductive purposes, made in channels usual for such other purposes, of seed produced on a farm either from seed obtained by

infringement under utility patent law. *See, e.g., Roche Products*, 733 F.2d at 862-63.

The Federal Circuit panel attempted to downplay the conflicts between utility patents issued on sexually reproducing plant varieties and PVPA certificates issued on the same varieties when it observed in the following three conclusory sentences of its *Pioneer* opinion, 200 F.3d at 1378:

> The district court observed, correctly, that the asserted conflict[s] [are] simply the difference in the rights and obligations imposed by the two statutes. It is not unusual for more than one statute to apply to a legal or property interest. For example, an ornamental design may qualify for protection under both copyright and design patent law. The fact that laws are of different scope does not invalidate the laws.

The panel cited no authority for its position. The cases cited by the district court do not support protection of sexually reproducing plant varieties under both the PVPA and utility patent provisions. This is because so-called "dual protection" cannot exist where each federal

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authority of the owner for seeding purposes or from seed produced by descent on such farm from seed obtained by authority of the owner for seeding purposes shall not constitute an infringement. A purchaser who diverts seed from such channels to seeding purposes shall be deemed to have notice under section 2567 of this title that the actions of the purchaser constitute an infringement.

2544. Research exemption

The use and reproduction of a protected variety for plant breeding or other bona fide research shall not constitute an infringement of the protection provided under this chapter.

statute purports to protect the same commercially valuable attribute(s) of a thing.

The valuable attribute of plants protected under the PVPA is that they can be multiplied by sexual reproduction on a commercially profitable scale. The district court in its order found that Title 35 and the PVPA protect the same right – the right to exclude others from propagating (multiplying or increasing) a protected plant variety by means of sexual reproduction.

The district court principally relied on *Mazer v. Stein*, 347 U.S. 201 (1954). (Pet.App. 33-34.) In that case, the Court simply held statuettes having artistic value and that are incorporated into a lamp stand having utility could be the proper subject of copyright to protect the artistic value. *Id.* at 214-217. The statuettes/lamp stands were not patented and the issue of their patentability was not decided. *Id.* at 217. The *Mazer* Court found it important to explain that: "Unlike a patent, a copyright gives no exclusive right to the art disclosed; protection is given only to the expression of the idea – not the idea itself." *Ibid.* The copyright statute and Title 35 deal with two different rights of exclusion. One statute (copyright) protects an identifiable and independent attribute of the stands, while another statute (patent) protects a different identifiable and separate attribute. There is not "dual" protection accorded by the two federal statutes – both could not be applied to protect the same attribute of an item such as a lamp stand.

The district court and circuit panel did not address *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7thCir. 1976). The *Ropat* court ruled that, while a design patent

and a utility patent could be issued under Title 35 on the same construction, each patent must claim a separate, distinct patentable invention. Each of the patents could not be issued "if the feature in which the novel esthetic [a]ffect resides is the identical feature which produces the novel function so that a structure embodying the mechanical invention would of necessity embody the design, and vice versa." *Id.* at 381.

Congress itself expressed its intent that a copyright and a utility patent could not be issued to protect the same attribute of a construction. The Copyright Act provides at 17 U.S.C. § 101:

> [T]he design of a useful article, as defined in this section, shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from and are capable of existing independently of, the utilitarian aspects of the article.

This Court recently acknowledged the rule that proscribes dual federal protection of the same valuable attribute(s) of a thing. In *Traffix Devices, Inc. v. Marketing Displays, Inc.*, ___ U.S. ___, 121 S.Ct. 1255, 2001 WL 265741 (March 20, 2001), the unanimous Court reversed a circuit court's ruling that had allowed a utility patent holder to in effect extend the period of federal protection for his invention beyond the 20 years' grant contained in its utility patent. The holder had done so by asserting the Lanham Act's trade dress infringement provision protected its invention after the utility patent issued on that invention had expired. In making short work of this argument, the Court in *Traffix* concluded that statutory trade dress protection did not apply because the invention's purportedly trade dress protectable attributes were

the same ones previously protected by the utility patent – specifically, the functional aspects of the invention, which could not be protected by two different federal statutes. 2001 WL 265741, at p. 7.

Dual protection of the same invention is exactly what the PTO board and Federal Circuit panel have sanctioned in the case at bar. Their orders impermissibly allow statutory protection under the PVPA for the right to multiply a plant variety by sexual reproduction while simultaneously allowing statutory protection under Title 35 for the same right. If a Title 35 utility patent and a Title 35 design patent cannot both be issued to provide protection for the same attributes of an invention (see *Ropat*) and the same is true of a Title 35 utility patent and a Lanham Act trade dress (see *Traffix*), then a Title 35 utility patent certainly cannot be issued to provide protection for the same valuable attributes of a thing (a plant variety's ability to sexually reproduce) that is subject to federal protection under a separate and more specific statute (the PVPA). Allowance of dual federal protection of seeds and seed grown plants is even more unjustified in this case than the rejected allowance of dual protection of the items of manufacture involved in *Ropat* and *Traffix*. Here, the federal statutes directly conflict on the scope of the protection accorded.

The nation's most important cash crops such as soybeans, cotton, corn, wheat and rice all require use of sexual reproduction (seeds) in order to produce crops in commercial quantities because these crops must be replanted each year. Even breeders of plants such as bushes, trees and flowers that can be commercially produced by use of asexual reproductioı. make use of sexual reproduction during plant breeding research to develop new plants that are then asexually reproduced.

Farmers across the nation now are being sued for patent infringement for saving seed to replant on their own farms. This is a direct result of the *Hibberd* ruling and the PTO's granting utility patents to federally protect seeds and seed grown plants. A farmer's act of saving seed for replanting in his own fields is not a violation of the PVPA. 7 U.S.C. § 2543; *see also Asgrow Seed*, 513 U.S. at 190-91. George Washington wrote " . . . it is miserable for a farmer to be obliged to buy his seeds; to exchange seeds may, in some cases, be useful, but to buy them after the first year is disreputable." (George Washington letter to farm manager William Pierce, November 16, 1791.) The 1994 PVPA Amendments House Report (Agricultural Committee) No. 103-699, Aug. 12, 1994 (To accompany H.R. 2927), provides in Section 10, p. 17:

> SECTION 10 – RIGHT TO SAVE SEED; CROP EXEMPTION
>
> Section 10 of the bill amends section 113 of the PVPA by deleting the provision of current law that allows a person, whose primary farming occupation is the growing of crops for sale for other than reproductive purposes, to sell "saved seed" to other such persons, for reproductive purposes. The amendment does not diminish the right of a farmer to save seed for replanting and to use the resulting crop or to sell the seed for other than reproductive purposes.
>
> It is not the intent of the Committee that deletion of the provision allowing the sale of saved seed to be viewed as a step toward the eventual end to the traditional right of farmers to save seed for use on their own holdings. * * *

The PTO and Federal Circuit's rulings put an end to the historically recognized and respected right to save seed.

The agricultural industry has gone through a period of intense economic consolidation. Allowing twenty year utility patent protection of sexually reproduced plant varieties, the parts thereof and their seeds with no exemption for plant breeding research greatly increases the consolidation of plant gene pools within large corporate entities, contrary to the intent of Congress when it enacted the PPA and PVPA. 7 U.S.C. § 2544. Now a person or company wishing to engage in plant breeding research must take into account the risk of becoming embroiled in a patent infringement lawsuit. A plant's DNA is a storehouse of information that is communicated by RNA messages that manifest themselves in the characteristics of an offspring plant. It is essential that breeders have access to this DNA (a plant's germplasm). A plant's DNA cannot be "manufactured" – it must be taken from the germplasm. Companies now using utility patents to lock up plant genes for twenty years had previously enjoyed decades of the unfettered use in research of genes from plant varieties developed by others.

These essential PVPA provisions, 7 U.S.C. §§ 2543 (seed saving) and 2544 (research exemption), directly conflict with a system of federal protection premised on utility patents. The PVPA is the exclusive source of federal protection for seeds, seed grown plants and the parts thereof.

CONCLUSION

Utility patents cannot be issued to protect seeds, seed grown plants and the parts thereof. The right to exclude others from sexually reproducing plant varieties is subject to federal protection exclusively under the PVPA. The right does not fall within the ambit of the utility patent subject matter provision, 35 U.S.C. § 101.

The Court should declare each of the patents-in-suit invalid, and remand this case to the district court with directions that it (a) enter judgment for the petitioners on their patent invalidity defense, (b) order this action dismissed with prejudice and (c) assess all costs to the respondent.

Respectfully submitted,

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7 U.S.C. § 2321

2321. Establishment

There is hereby established in the Department of Agriculture an office to be known as the Plant Variety Protection Office, which shall have the functions set forth in this chapter.

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7 U.S.C. § 2323

2323. Organization

The organization of the Plant Variety Protection Office shall, except as provided herein, be determined by the Secretary of Agriculture (hereinafter called the Secretary). The office shall devote itself substantially exclusively to the administration of this chapter.

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7 U.S.C. § 2327

2327. Plant Variety Protection Board

(a) Appointment

The Secretary shall appoint a Plant Variety Protection Board. The Board shall consist of individuals who are experts in various areas of varietal development covered by this chapter. Membership of the Board shall include farmer representation and shall be drawn approximately equally from the private or seed industry sector and from the sector of government or the public. The Secretary or

the designee of the Secretary shall act as chairperson of the Board without voting rights except in the case of ties.

(b) Functions of Board

The functions of the Plant Variety Protection Board shall include:

(1) Advising the Secretary concerning the adoption of Rules and Regulations to facilitate the proper administration of this chapter;

(2) Making advisory decisions on all appeals from the examiner. The Board shall determine whether to act as a full Board or by panels it selects; and whether to review advisory decisions made by a panel. For service on such appeals, the Board may select, as temporary members, experts in the area to which the particular appeal relates; and

(3) Advising the Secretary on all questions under section 2404 of this title.

(c) Compensation of Board

The members of the Plant Variety Protection Board shall serve without compensation except for standard government reimbursable expenses.

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7 U.S.C. § 2401

2401. Definitions and rules of construction

(a) Definitions

As used in this chapter:

(1) Basic seed

The term "basic seed" means the seed planted to produce certified or commercial seed.

(2) Breeder

The term "breeder" means the person who directs the final breeding creating a variety or who discovers and develops a variety. If the actions are conducted by an agent on behalf of a principal, the principal, rather than the agent, shall be considered the breeder. The term does not include a person who redevelops or rediscovers a variety the existence of which is publicly known or a matter of common knowledge.

(3) Essentially derived variety

(A) In general

The term "essentially derived variety" means a variety that –

(i) is predominantly derived from another variety (referred to in this paragraph as the "initial variety") or from a variety that is predominantly derived from the initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety;

(ii) is clearly distinguishable from the initial variety; and

(iii) except for differences that result from the act of derivation, conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety.

(B) Methods

An essentially derived variety may be obtained by the selection of a natural or induced mutant or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, transformation by genetic engineering, or other method.

(4) Kind

The term "kind" means one or more related species or subspecies singly or collectively known by one common name, such as soybean, flax, or radish.

(5) Seed

The term "seed", with respect to a tuber propagated variety, means the tuber or the part of the tuber used for propagation.

(6) Sexually reproduced

The term "sexually reproduced" includes any production of a variety by seed, but does not include the production of a variety by tuber propagation.

(7) Tuber propagated

The term "tuber propagated" means propagated by a tuber or a part of a tuber.

(8) United States

The terms "United States" and "this country" mean the United States, the territories and possessions of the United States, and the Commonwealth of Puerto Rico.

(9) Variety

The term "variety" means a plant grouping within a single botanical taxon of the lowest known rank, that, without regard to whether the conditions for plant variety protection are fully met, can be defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, distinguished from any other plant grouping by the expression of at least one characteristic and considered as a unit with regard to the suitability of the plant grouping for being propagated unchanged. A variety may be represented by seed, transplants, plants, tubers, tissue culture plantlets, and other matter.

(b) Rules of construction

For the purposes of this chapter:

(1) Sale or disposition for nonreproductive purposes

The sale or disposition, for other than reproductive purposes, of harvested material produced as a result of experimentation or testing of a variety to ascertain the characteristics of the variety, or as a by-product of increasing a variety, shall not be considered to be a sale or disposition for purposes of exploitation of the variety.

(2) Sale or disposition for reproductive purposes

The sale or disposition of a variety for reproductive purposes shall not be considered to be a sale or disposition for the purposes of exploitation of the variety if the sale or disposition is done as an integral part of a program of experimentation or testing to ascertain the characteristics of the variety, or to increase the variety on behalf of the breeder or the successor in interest of the breeder.

(3) Sale or disposition of hybrid seed

The sale or disposition of hybrid seed shall be considered to be a sale or disposition of harvested material of the varieties from which the seed was produced.

(4) Application for protection or entering into a register of varieties

The filing of an application for the protection or for the entering of a variety in an official register of varieties, in any country, shall be considered to render the variety a matter of common knowledge from the date of the application, if the application leads to the granting of protection or to the entering of the variety in the official register of varieties, as the case may be.

(5) Distinctness

The distinctness of one variety from another may be based on one or more identifiable morphological, physiological, or other characteristics (including any characteristics evidenced by processing or product characteristics, such as milling and baking characteristics in the case of wheat) with respect to which a difference in genealogy may contribute evidence.

(6) Publicly known varieties

(A) In general

A variety that is adequately described by a publication reasonably considered to be a part of the public technical knowledge in the United States shall be considered to be publicly known and a matter of common knowledge.

(B) Description

A description that meets the requirements of subparagraph (A) shall include a disclosure of the principal characteristics by which a variety is distinguished.

(C) Other means

A variety may become publicly known and a matter of common knowledge by other means.

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7 U.S.C. § 2402

2402. Right to plant variety protection; plant varieties protectable

(a) In general

The breeder of any sexually reproduced or tuber propagated plant variety (other than fungi or bacteria) who has so reproduced the variety, or the successor in interest of the breeder, shall be entitled to plant variety protection for the variety, subject to the conditions and requirements of this chapter, if the variety is –

(1) new, in the sense that, on the date of filing of the application for plant variety protection, propagating or harvested material of the variety has not been sold or otherwise disposed of to other persons, by or with the consent of the breeder, or the successor in interest of the breeder, for purposes of exploitation of the variety –

(A) in the United States, more than 1 year prior to the date of filing; or

(B) in any area outside of the United States –

(i) more than 4 years prior to the date of filing, except that in the case of a tuber propagated plant variety the Secretary may waive the 4-year limitation for a period ending 1 year after April 4, 1996; or

(ii) in the case of a tree or vine, more than 6 years prior to the date of filing;

(2) distinct, in the sense that the variety is clearly distinguishable from any other variety the existence of which is publicly known or a matter of common knowledge at the time of the filing of the application;

(3) uniform, in the sense that any variations are describable, predictable, and commercially acceptable; and

(4) stable, in the sense that the variety, when reproduced, will remain unchanged with regard to the essential and distinctive characteristics of the variety with a reasonable degree of reliability commensurate with that of varieties of the same category in which the same breeding method is employed.

(b) Multiple applicants

(1) In general

If 2 or more applicants submit applications on the same effective filing date for varieties that cannot be clearly distinguished from one another, but that fulfill all other requirements of subsection (a) of this section, the applicant who first complies with all requirements of this chapter shall be entitled to a certificate of plant variety protection, to the exclusion of any other applicant.

(2) Requirements completed on same date

(A) In general

Except as provided in subparagraph (B), if 2 or more applicants comply with all requirements for protection on the same date, a certificate shall be issued for each variety.

(B) Varieties indistinguishable

If the varieties that are the subject of the applications cannot be distinguished in any manner, a single certificate shall be issued jointly to the applicants.

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7 U.S.C. § 2421

2421. Application for recognition of plant variety rights

(a) An application for a certificate of Plant Variety Protection may be filed by the owner of the variety sought to be protected. The application shall be made in writing to the Secretary, shall be signed by or on behalf of

the applicant, and shall be accompanied by the prescribed fee.

(b) An error as to the naming of the breeder, without deceptive intent, may be corrected at any time, in accordance with regulations established by the Secretary.

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7 U.S.C. § 2422

2422. Content of application

An application for a certificate recognizing plant variety rights shall contain:

(1) The name of the variety except that a temporary designation will suffice until the certificate is to be issued. The variety shall be named in accordance with regulations issued by the Secretary.

(2) A description of the variety setting forth its distinctiveness, uniformity, and stability and a description of the genealogy and breeding procedure, when known. The Secretary may require amplification, including the submission of adequate photographs or drawings or plant specimens, if the description is not adequate or as complete as is reasonably possible, and submission of records or proof of ownership or of allegations made in the application. An applicant may add to or correct the description at any time, before the certificate is issued, upon a showing acceptable to the Secretary that the revised description is retroactively accurate. Courts shall protect others from any injustice which would result. The Secretary may accept records of the breeder and of any

official seed certifying agency in this country as evidence of stability where applicable.

(3) A statement of the basis of the claim of the applicant that the variety is new.

(4) A declaration that a viable sample of basic seed (including any propagating material) necessary for propagation of the variety will be deposited and replenished periodically in a public repository in accordance with regulations to be established hereunder.

(5) A statement of the basis of applicant's ownership.

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7 U.S.C. § 2483

2483. Contents and term of plant variety protection

(a) Certificate

(1) Every certificate of plant variety protection shall certify that the breeder (or the successor in interest of the breeder),[1] has the right, during the term of the plant variety protection, to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing (as distinguished from developing) a hybrid or different variety therefrom, to the extent provided by this chapter.

(2) If the owner so elects, the certificate shall –

---

[1] So in original. The comma probably should not appear.

(A) specify that seed of the variety shall be sold in the United States only as a class of certified seed; and

(B) if so specified, conform to the number of generations designated by the owner.

(3) An owner may waive a right provided under this subsection, other than a right that is elected by the owner under paragraph (2)(A).

(4) The Secretary may at the discretion of the Secretary permit such election or waiver to be made after certificating and amend the certificate accordingly, without retroactive effect.

(b) Term

(1) In general

Except as provided in paragraph (2), the term of plant variety protection shall expire 20 years from the date of issue of the certificate in the United States.

(2) Exceptions

If the certificate is not issued within three years from the effective filing date, the Secretary may shorten the term by the amount of delay in the prosecution of the application attributed by the Secretary to the applicant, except that –

(A) in the case of a tuber propagated plant variety subject to a waiver granted under section 2402(a)(1)(B)(i) of this title, the term of the plant variety protection shall expire 20 years after the date of the original grant of the plant breeder's rights to the variety outside the United States; and

(B) in the case of a tree or vine, the term of the plant variety protection shall expire 25 years from the date of issue of the certificate.

(c) Expiration upon failure to comply with regulations; notice

The term of plant variety protection shall also expire if the owner fails to comply with regulations, in force at the time of certificating, relating to replenishing seed in a public repository, or requiring the submission of a different name for the variety, except that this expiration shall not occur unless notice is mailed to the last owner recorded as provided in section 2531(d) of this title and the last owner fails, within the time allowed thereafter, not less than three months, to comply with said regulations, paying an additional fee to be prescribed by the Secretary.

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7 U.S.C. § 2541

2541. Infringement of plant variety protection

(a) Acts constituting infringement

Except as otherwise provided in this subchapter, it shall be an infringement of the rights of the owner of a protected variety to perform without authority, any of the following acts in the United States, or in commerce which can be regulated by Congress or affecting such commerce, prior to expiration of the right to plant variety protection but after either the issue of the certificate or the distribution of a protected plant variety with the notice under section 2567 of this title:

(1) sell or market the protected variety, or offer it or expose it for sale, deliver it, ship it, consign it, exchange it, or solicit an offer to buy it, or any other transfer of title or possession of it;

(2) import the variety into, or export it from, the United States;

(3) sexually multiply, or propagate by a tuber or a part of a tuber, the variety as a step in marketing (for growing purposes) the variety;

(4) use the variety in producing (as distinguished from developing) a hybrid or different variety therefrom;

(5) use seed which had been marked "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited" or progeny thereof to propagate the variety;

(6) dispense the variety to another, in a form which can be propagated, without notice as to being a protected variety under which it was received;

(7) condition the variety for the purpose of propagation, except to the extent that the conditioning is related to the activities permitted under section 2543 of this title;

(8) stock the variety for any of the purposes referred to in paragraphs (1) through (7);

(9) perform any of the foregoing acts even in instances in which the variety is multiplied other than sexually, except in pursuance of a valid United States plant patent; or

(10) instigate or actively induce performance of any of the foregoing acts.

(b) Uses authorized by owner

(1) Subject to paragraph (2), the owner of a protected variety may authorize the use of the variety under this section subject to conditions and limitations specified by the owner.

(2) In the case of a contract between a seed producer and the owner of a protected variety of lawn, turf, or forage grass seed, or alfalfa or clover seed for the production of seed of the protected variety, the producer shall be deemed to be authorized by the owner to sell such seed and to use the variety if –

(A) the producer has fulfilled the terms of the contract;

(B) the owner refuses to take delivery of the seed or refuses to pay any amounts due under the contract within 30 days of the payment date specified in the contract; and

(C) after the expiration of the period specified in subparagraph (B), the producer notifies the owner of the producer's intent to sell the seed and unless the owner fails to pay the amounts due under the contract and take delivery of the seed within 30 days of such notification. For the purposes of this paragraph, the term "owner" shall include any licensee of the owner.

(3) Paragraph (2) shall apply to contracts entered into with respect to plant varieties protected under this chapter as in effect on the day before the effective date of this provision as well as plant varieties protected under this chapter as amended by the Plant Variety Protection Act Amendments of 1994.

(4) Nothing in this subsection shall affect any other rights or remedies of producers or owners that may exist under other Federal or State laws.

(c) Applicability to certain plant varieties

This section shall apply equally to –

(1) any variety that is essentially derived from a protected variety, unless the protected variety is an essentially derived variety;

(2) any variety that is not clearly distinguishable from a protected variety;

(3) any variety whose production requires the repeated use of a protected variety; and

(4) harvested material (including entire plants and parts of plants) obtained through the unauthorized use of propagating material of a protected variety, unless the owner of the variety has had a reasonable opportunity to exercise the rights provided under this chapter with respect to the propagating material.

(d) Acts not considered infringing

It shall not be an infringement of the rights of the owner of a variety to perform any act concerning propagating material of any kind, or harvested material, including entire plants and parts of plants, of a protected variety that is sold or otherwise marketed with the consent of the owner in the United States, unless the act involves further propagation of the variety or involves an export of material of the variety, that enables the propagation of the variety, into a country that does not protect

varieties of the plant genus or species to which the variety belongs, unless the exported material is for final consumption purposes.

(e) Private noncommercial uses

It shall not be an infringement of the rights of the owner of a variety to perform any act done privately and for noncommercial purposes.

(f) "Perform without authority" defined

As used in this section, the term "perform without authority" includes performance without authority by any State, any instrumentality of a State, and any officer or employee of a State or instrumentality of a State acting in the official capacity of the officer or employee. Any State, and any such instrumentality, officer, or employee, shall be subject to the provisions of this chapter in the same manner and to the same extent as any nongovernmental entity.

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7 U.S.C. § 2543

2543. Right to save seed; crop exemption

Except to the extent that such action may constitute an infringement under subsections (3) and (4) of section 2541 of this title, it shall not infringe any right hereunder for a person to save seed produced by the person from seed obtained, or descended from seed obtained, by authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on the farm of the person, or for sale as provided

in this section. A bona fide sale for other than reproductive purposes, made in channels usual for such other purposes, of seed produced on a farm either from seed obtained by authority of the owner for seeding purposes or from seed produced by descent on such farm from seed obtained by authority of the owner for seeding purposes shall not constitute an infringement. A purchaser who diverts seed from such channels to seeding purposes shall be deemed to have notice under section 2567 of this title that the actions of the purchaser constitute an infringement.

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7 U.S.C. § 2544

2544. Research exemption

The use and reproduction of a protected variety for plant breeding or other bona fide research shall not constitute an infringement of the protection provided under this chapter.

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7 U.S.C. § 2567

2567. Limitation of damages; marking and notice

Owners may give notice to the public by physically associating with or affixing to the container of seed of a variety or by fixing to the variety, a label containing either the words "Unauthorized Propagation Prohibited" or the words "Unauthorized Seed Multiplication Prohibited" and after the certificate issues, such additional

words as "U.S. Protected Variety". In the event the variety is distributed by authorization of the owner and is received by the infringer without such marking, no damages shall be recovered against such infringer by the owner in any action for infringement, unless the infringer has actual notice of knowledge that propagation is prohibited or that the variety is a protected variety, in which event damages may be recovered only for infringement occurring after such notice. As to both damages and injunction, a court shall have discretion to be lenient as to disposal of materials acquired in good faith by acts prior to such notice.

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35 U.S.C. § 101

101. Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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35 U.S.C. § 112

112. Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact

terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed.

A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

An element in a claim for a combination may be expressed as a means or step for performing a specified

function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

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35 U.S.C. § 119

119. Benefit of earlier filing date; right of priority

(a) An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

(b)(1) No application for patent shall be entitled to this right of priority unless a claim is filed in the Patent and Trademark Office, identifying the foreign application

by specifying the application number on that foreign application, the intellectual property authority or country in or for which the application was filed, and the date of filing the application, at such time during the pendency of the application as required by the Director.

(2) The Director may consider the failure of the applicant to file a timely claim for priority as a waiver of any such claim. The Director may establish procedures, including the payment of a surcharge, to accept an unintentionally delayed claim under this section.

(3) The Director may require a certified copy of the original foreign application, specification, and drawings upon which it is based, a translation if not in the English language, and such other information as the Director considers necessary. Any such certification shall be made by the foreign intellectual property authority in which the foreign application was filed and show the date of the application and of the filing of the specification and other papers.

(c) In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed application in the same foreign country instead of the first filed foreign application, provided that any foreign application filed prior to such subsequent application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority.

(d) Applications for inventors' certificates filed in a foreign country in which applicants have a right to apply, at their discretion, either for a patent or for an inventor's certificate shall be treated in this country in the same manner and have the same effect for purpose of the right of priority under this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents, provided such applicants are entitled to the benefits of the Stockholm Revision of the Paris Convention at the time of such filing.

(e)(1) An application for patent filed under section 111(a) or section 363 of this title for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in a provisional application filed under section 111(b) of this title, by an inventor or inventors named in the provisional application, shall have the same effect, as to such invention, as though filed on the date of the provisional application filed under section 111(b) of this title, if the application for patent filed under section 111(a) or section 363 of this title is filed not later than 12 months after the date on which the provisional application was filed and if it contains or is amended to contain a specific reference to the provisional application. No application shall be entitled to the benefit of an earlier filed provisional application under this subsection unless an amendment containing the specific reference to the earlier filed provisional application is submitted at such time during the pendency of the application as required by the Director. The Director may consider the failure to submit such an amendment within that time period as a waiver of any benefit under this subsection. The Director

may establish procedures, including the payment of a surcharge, to accept an unintentionally delayed submission of an amendment under this subsection during the pendency of the application.

(2) A provisional application filed under section 111(b) of this title may not be relied upon in any proceeding in the Patent and Trademark Office unless the fee set forth in subparagraph (A) or (C) of section 41(a)(1) of this title has been paid.

(3) If the day that is 12 months after the filing date of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, the period of pendency of the provisional application shall be extended to the next succeeding secular or business day.

(f) Applications for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents.

(g) As used in this section –

(1) the term "WTO member country" has the same meaning as the term is defined in section 104(b)(2) of this title; and

(2) the term "UPOV Contracting Party" means a member of the International Convention for the Protection of New Varieties of Plants.

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35 U.S.C. § 154

154. Contents and term of patent; provisional rights

(a) In General. –

(1) Contents. – Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States, and, if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States, or importing into the United States, products made by that process, referring to the specification for the particulars thereof.

(2) Term. – Subject to the payment of fees under this title, such grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States or, if the application contains a specific reference to an earlier filed application or applications under section 120, 121, or 365(c) of this title, from the date on which the earliest such application was filed.

(3) Priority. – Priority under section 119, 365(a), or 365(b) of this title shall not be taken into account in determining the term of a patent.

(4) Specification and drawing. – A copy of the specification and drawing shall be annexed to the patent and be a part of such patent.

* * *

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35 U.S.C. § 161

161. Patents for plants

Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

The provisions of this title relating to patents for inventions shall apply to patents for plants, except as otherwise provided.

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35 U.S.C. § 162

162. Description, claim

No plant patent shall be declared invalid for noncompliance with section 112 of this title if the description is as complete as is reasonably possible.

The claim in the specification shall be in formal terms to the plant shown and described.

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35 U.S.C. § 163

163. Grant

In the case of a plant patent, the grant shall include the right to exclude others from asexually reproducing the plant, and from using, offering for sale, or selling the plant so reproduced, or any of its parts, throughout the United States, or from importing the plant so reproduced, or any parts thereof, into the United States.

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35 U.S.C. § 164

164. Assistance of Department of Agriculture

The President may by Executive order direct the Secretary of Agriculture, in accordance with the requests of the Director, for the purpose of carrying into effect the provisions of this title with respect to plants (1) to furnish available information of the Department of Agriculture, (2) to conduct through the appropriate bureau or division of the Department research upon special problems, or (3) to detail to the Director officers and employees of the Department.

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35 U.S.C. § 271

271. Infringement of patent

(a) Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells

any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.

(b) Whoever actively induces infringement of a patent shall be liable as an infringer.

(c) Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

(d) No patent owner otherwise entitled to relief for infringement or contributory infringement of a patent shall be denied relief or deemed guilty of misuse or illegal extension of the patent right by reason of his having done one or more of the following: (1) derived revenue from acts which if performed by another without his consent would constitute contributory infringement of the patent; (2) licensed or authorized another to perform acts which if performed without his consent would constitute contributory infringement of the patent; (3) sought to enforce his patent rights against infringement or contributory infringement; (4) refused to license or use any rights to the patent; or (5) conditioned the license of any rights to the patent or the sale of the patented product on the acquisition of a license to rights in another

patent or purchase of a separate product, unless, in view of the circumstances, the patent owner has market power in the relevant market for the patent or patented product on which the license or sale is conditioned.

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(21)

Supreme Court, U.S.
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In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

REPLY BRIEF FOR PETITIONERS

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ARGUMENT

I. UTILITY PATENTS ISSUED ON SEXUALLY REPRODUCING PLANT VARIETIES, THE PARTS THEREOF AND THEIR SEEDS ARE INVALID AND CANNOT CONFER THE RIGHT TO EXCLUDE OTHERS FROM SEXUALLY REPRODUCING PLANT VARIETIES, OR FROM SELLING OR USING PLANT VARIETIES REPRODUCED SEXUALLY, BECAUSE THESE VARIETIES AND SEEDS ARE SUBJECT TO FEDERAL PROTECTION ONLY THROUGH THE ISSUANCE OF CERTIFICATES OF PLANT VARIETY PROTECTION.

A. Pioneer And Its Amici Misapprehend The Statutes And Farm Advantage's Position When They Argue Farm Advantage Relies On An "Implicit Repeal."

Pioneer and its amici assert that Farm Advantage's statutory construction argument is premised on an "implicit repeal"; specifically, that the enactment of the 1970 PVPA effected by implication a narrowing of the coverage of 35 U.S.C. § 101. Pioneer brief, at 4-5, 18, 26, 28 and 34-36.[1] This is a mischaracterization of Farm Advantage's position. Pioneer and its amici's response further is based on an absolute misunderstanding of the successively enacted plant-specific statutes.

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[1] Most of the amici repeat Pioneer's argument. AILP, at 2; ABA, at 5-8; Cargill, at 6-9; WLF, at 5-9. Rule 37 provides that an "*amicus curiae* brief [that does not bring to the attention of the Court relevant matter not brought to its attention by the parties] . . . burdens the Court, and its filing is not favored." Pioneer's amici briefs, submitted by seed producers and their trade organizations, amount to repetitions of the same arguments put forth by Pioneer and the Solicitor General.

Pioneer misstates the statutory history when it says the only change to § 101 and its precursors since 1793 was the substitution of the word "process" for "art." Pioneer, at 5 and 26. This is not true. The 1930 PPA was a direct amendment to the utility patent provisions, including the subject matter provision then contained in Revised Statutes § 4886 (the direct precursor of § 101). The PPA placed in § 4886 a new category of things subject to utility patent protection, "plants," but limited to those plants reproduced by asexual methods. The PPA amendment to § 4886, and to the other utility patent provisions, *expressly* excluded from patent protection a plant's seeds and any plants reproduced by sexual methods. Revised Statutes, §§ 4884, 4886 and 4888. Section 4886, after the 1930 PPA, remained unchanged until the 1952 reenactment of the Patent Act.

The second *express* change to the utility patent subject matter provision occurred during the 1952 reenactment. Congress removed the term "plants" from § 101 and placed it into the newly enacted § 161, retaining the existing asexual reproduction limitation. This change in § 101 was described in Senate Report No. 82-1979, which provides (1952 WL 3180, p. 10): "Section 101 follows the wording of the existing statute [*i.e.*, Revised Statutes § 4886] as to the subject matter for patents, except that reference to plant patents has been omitted for incorporation in section 301 [35 U.S.C. § 161]. . . . "

The 1930 PPA and the 1952 reenactment resulted in express changes to § 101 (and its precursor) that directly involved the subject of the patentability of plants. In 1930, the new patentable category of "plants" was added, but limited to those plants reproduced by asexual

methods. Had Congress also wanted plants that are propagated by sexual methods to be patentable subject matter, then it would not have imposed the express asexual reproduction limitation. In 1952, Congress removed from § 101 the entire category of "plants" and placed that category into a separate chapter ("Patents for Plants") with the retention of the asexual reproduction limitation. These statutory enactments are express limitations on § 101; they are not limitations by implication.

The PVPA was enacted in 1970, following years of debate on whether Chapter 15 of Title 35 ("Patents for Plants") should be amended to provide patent protection for plants propagated by sexual methods. Patent Law Revision Hearings, Subcommittee on Patents, Trademarks and Copyrights, Senate Judiciary Committee, 90th Cong., 2nd Sess., 1968, Part 3. Rather than constitute an "implicit repeal," the 1970 PVPA was a deliberate decision on Congress' part not to sanction the granting of patent protection for seed grown plants. S.R. No. 91-1246, at pages 2-3 (quoted at pages 40-41 of Farm Advantage's principal brief).

Some of Pioneer's amici take Pioneer's statutory construction argument one step further. They assert that, if the 1970 PVPA was enacted by Congress in express recognition that seed grown plants were not patentable, then the Court's *Chakrabarty* decision and the PTO's *Hibberd* opinion prove that the 1970 Congress acted on a mistaken belief – the product of nature/living things doctrine. ABA, at 11; WLF, at 5; BIO, at 5, n. 3. These amici argue the judiciary and PTO are not bound by the 1970 Congress' interpretation of § 101 as that interpretation was mistaken.

There are three obvious rejoinders to this argument. First, as early as 1930, Congress recognized plants, despite being "living things," could be subject to patent protection. Congress determined in the PPA to limit patent protection to plants that are reproduced asexually. Congress did not base this decision on the product of nature/living things doctrine, but on its conclusion patent protection was undesirable when applied to sexual reproduction of plants. Second, from 1965-70, Congress and a presidential commission considered whether the plant patent provisions should be amended to permit the patenting of seed grown plants. Ultimately, different but patent-like protection was provided through the 1970 PVPA, that like the 1930 PPA accords federal protection to a "living thing" (the right to exclude others from reproducing plants by seed). A separate act was enacted not based on the product of nature-living things doctrine, but rather to ensure that the historic rights of plant breeders to experiment with another's seed and of farmers to save seed were protected, that a specialized agency would administer the federal protection, and that other aspects of the seed grown crops industry would not be changed by application of federal law. 7 U.S.C. §§ 2321, 2323, 2327, 2541(d) and 2543-44. Third, even if Congress was "mistaken" (which it was not), the amici's argument goes nowhere. The fact is Congress *legislated* on the precise subject in 1930, 1952 and 1970. The judiciary cannot nullify legislation on the basis of Congress' motivation in legislating. Acceptance of the amici's argument would permit federal courts to overrule legislation whenever

they deemed some member(s) of Congress voted for legislation when mistaken, uninterested or otherwise confused.

B. *Chakrabarty* Supports Farm Advantage And The *Hibberd* Decision Has No Claim To Judicial Deference.

Pioneer and its amici rely on an incorrect characterization of *Diamond v. Chakrabarty*, 447 U.S. 303 (1980). They argue, to the effect, that the *Chakrabarty* Court settled the question of whether § 101 covers the reproduction (sexual and asexual) of plants. Pioneer, at 34-38; AIPL, at 3; Cargill, at 4-6; BIO, at 16-17; ASTA, at 7-9. The Solicitor General's brief typifies the argument, and Farm Advantage addresses it.

The Solicitor states "[t]he *Chakrabarty* Court then rejected the argument that Congress's enactment of the PPA and the PVPA reflected an understanding that plants could never be patented under Section 101." U.S., at 11. From this premise, the Solicitor ultimately concludes the *Chakrabarty* Court actually held plants were included within § 101 and that the PTO board in *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985), simply applied this straightforward holding. U.S., at 11-17. The Solicitor maintains Farm Advantage can only prevail if the Court overrules *Chakrabarty*. U.S., at 11-17.

Like respondent and its amici's statutory construction argument, this case law argument is grounded on a faulty first premise. The petitioner in *Chakrabarty* argued the enactments of the PPA and PVPA showed Congress' intent that *no* living thing was patentable subject matter.

Chakrabarty, 447 U.S. 310-11 and 314. The four dissenting Justices agreed. *Id.*, at 318-22 (Brennan, J., dissenting). The *Chakrabarty* majority countered that the enactment of the plant-specific statutes could not be taken as conclusive evidence of Congressional intent that § 101 could never encompass *any* living thing such as a micro-organism modified or created by genetic engineering. *Id.*, at 311-14. The majority agreed with the dissent that, with respect to "plants," Congress did express its intent to exclude this form of living thing from § 101's terms "manufacture" or "composition of matter." *Id.*, at 318. The majority instructed that Congress can exclude a living thing from § 101 by "craft[ing] a statute specifically designed for such living things." *Ibid.* The majority here was endorsing the limitation on the "anything under the sun" statement that Judge Rich acknowledged in *Application of Bergy*, 596 F.2d 952, 987 n. 25 (Cust. & Pat. App. 1979), *affd. sub nom., Diamond v. Chakrabarty*, 447 U.S. 303 (1980): "We recognize that, at the time the statement was made, its authors realized that Congress did not intend the term 'manufacture' in § 101 to include plants, which were specifically provided for elsewhere."

Far from being a direct application of *Chakrabarty*, the PTO board's *Hibberd* ruling contravenes the *Chakrabarty* analysis as well as the Court's discussion of the plant-specific statutes and their purpose in *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995). The PTO issued its notice that it "is now examining applications including claims to plant life – e.g., plants per se, seed, plant parts" in response to the board's *Hibberd* ruling. 1060 O.G. 4 (Oct. 8, 1985). That ruling was not based on the PTO's rulemaking process following a period of notice-and-comment.

The ruling is not entitled to judicial deference under *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), and accordingly *Hibberd* must stand on its own persuasive force without any entitlement to deference. *United States v. Mead Corp.*, ___ U.S. ___, 121 S.Ct. 2164, 2168 and 2172-75 (2001).[2] The *Hibberd* ruling has no persuasive power for the reasons stated in Farm Advantage's principal brief.

C. A Miscellaneous Provision Buried In The American Inventors Protection Act Of 1999, Which Itself Was Passed As A Small Part Of A Voluminous Consolidated Appropriations Act, Is Not Evidence Of Congressional Intent To Sanction The Patentability Of Plants Under § 101.

Pioneer argues 35 U.S.C. § 119(f), a miscellaneous provision of the American Inventors Protection Act of

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[2] Amicus United States at 17 cites *Blue Chip Stamps v. Manor Drug Stores*, 421 U.S. 723 (1975), and *Blau v. Lehman*, 368 U.S. 403 (1962), in support of a contention that Congressional failure to legislate against the PTO's practice is an endorsement of that practice. In *Blue Chip*, the Securities and Exchange Commission had unsuccessfully sought to persuade Congress to overrule a long-standing Court of Appeals decision, not an agency practice. In *Blau*, Congress had also refused to legislate to change a Court of Appeals interpretation of § 16(b) of the 1934 Securities Exchange Act and rejected the SEC's attempt to do so. The Court said: "Congress can and might amend § 16(b) if the Commission would present to it the policy arguments it has presented to us, but we think that Congress is the proper agency to change an interpretation of the Act unbroken since its passage, if the change is to be made." 368 U.S. at 413.

1999, evidences Congress' intent that plants (both sexually and asexually propagated) are patentable subject matter under § 101. Pioneer, at 41-46. Pioneer's argument is not supported by the terms of § 119(f) and the 1999 Act's history.[3]

Section 119(f) does not purport to address the issue of whether the terms "manufacture" and "composition of matter" appearing in § 101 should be construed to include "plants." Subsection (f) simply is part of a general provision, § 119, that provides for priority filing in the U.S. for an inventor who filed for patent protection in a foreign country within the preceding twelve months. 35 U.S.C. § 119(a). The Patents for Plants chapter of the patent act, 35 U.S.C. §§ 161-64, includes § 119(f) because the general patent provisions are incorporated into the plant patents chapter. 35 U.S.C. § 161 ("The provisions of this title relating to patents for inventions [utility patents] shall apply to patents for plants, except as otherwise provided."). Thus, it is not surprising that § 119's priority filing would be written in subsection (f) to apply to plants.

Section 119 is part of the "miscellaneous patent provisions" contained in the American Inventors Protection Act of 1999. H.R. 1907, appearing in Congressional Record (August 3, 1999), at H6929-H9650. The Act comprised 105 pages of text. *Id.*, at H6945 (statement of Ms. Kaptur). The Act was submitted under a manager's amendment that suspended the normal rules of debate.

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[3] In case the reader managed to miss Pioneer's argument the first time around, it is dutifully repeated by the amici. U.S., at 19-21; ABA, at 10-13; BASF, at 4-10; and BIO, at 21-22.

H6941 and H6945. It was "debated" for 20 minutes late in the evening on the day before it was scheduled for full House vote, and ultimately was passed as part of a massive year-end omnibus revenue bill. Pub.L. 106-113, Nov. 29, 1999, Consolidated Appropriations Act of 2000. The miscellaneous provisions of the Act, including § 119(f), were not discussed during the 20 minutes of debate. H6929 – H6950.[4] H.R. 1907 was reopened as unfinished business at 11:02 a.m. and passed without further debate at 11:12 a.m., August 4, 1999. Library of Congress Thomas Service, *Bill Status 106th Cong.*, <http://thomas.loc.gov/bss>. Two House members who were allowed to share ten minutes of the truncated debate had these observations:

> Therefore, when a 105-page bill comes before us on suspension, those of us who value this document [the Constitution] and devote much of our lives to preserving it under the oath that we take are very suspicious of any bill of such consequence that comes before us on suspension when we are allowed only 10 minutes to debate.

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[4] Pioneer at 44-45 quotes from page 328 (actually 145-46) of the House Conf. Rep. (106-464) to the Intellectual Property and Communications Omnibus Reform Act of 1999, Nov. 9, 1999, a reference to "utility patent protection for a plant variety." This reference was contained at page 68 of the 160 page House Report, 106-287, to accompany H.R. 1907, the American Inventors Protection Act of 1999, August 3, 1999. That August 3, 1999, evening Representative Kaptur said with regard to the actual statutory text, at H6945:

> There is a manager's amendment now which was walked to the floor at 9:17 p.m., which I could only get up to Page 54 reading very quickly here this evening. There are 105 pages in the bill.

> I would also say that with all due respect to the excellent minds that were involved in crafting this manager's amendment, it is only a handful of Members of this institution. This bill is not up on the web. I cannot ask the inventors I represent back home to go to any site to look at it so I can be advised on how to vote tomorrow morning.
>
> I know a fast ball when I see one. I have been here long enough to know that. I am offended by this, simply because I think the constitutional issues are so very important. * * *

H6945 (statement of Ms. Kaptur).

> We have now had changes in the bill which the gentlewoman from Ohio (Ms. Kaptur) has referred to which, frankly, I have not had the opportunity to review fully, and I have a sense that maybe I am with the 430 people in this House. There perhaps have been four or five who have reviewed this legislation. But I am very concerned that we are moving this tonight on suspension.

H6946 (statement of Mr. Hoyer).

Section 119(f) was not debated by Congress for the specific purpose to approve the issuance of utility patents on plants. The legislative history cited by Pioneer and its amici amount to sparse statements, mostly by seed producing industry members, of the historical fact that since *Hibberd* the PTO has issued utility patents on plants. The statements are not directed toward § 119(f) in particular and the view that its enactment will result in Congress' explicit (or even implicit) approval of the PTO's practice.

The isolated statements, contained in volumes of legislative reports, do not show Congress considered the precise issue at hand. These few references are in stark contrast to Congress' attention to this issue prior to passing the 1930 PPA and Congress' extensive consideration of the precise issue during the 1965-70 hearings that culminated with the passage of the PVPA. Congress has rejected extending Title 35 to cover seed grown plants on *every occasion* it has considered the precise issue.

Section 119(f), which does not mention § 101, and isolated statements by seed industry advocates that utility patents on seed grown plants have been issued by the PTO since the agency's *Hibberd* ruling do not equate to Congressional awareness that this agency practice exists, let alone Congressional intent to sanction this practice. In *Securities and Exchange Comm'n. v. Sloan*, 436 U.S. 103, 121 (1978), the Court observed:

> We are extremely hesitant to presume general congressional awareness of the Commission's construction based only upon a few isolated statements in the thousands of pages of legislative documents. That language in a Committee Report, without additional indication of more widespread congressional awareness, is simply not sufficient to invoke the presumption in a case such as this. For here its invocation would result in a construction of the statute which not only is at odds with the language of the section in question and the pattern of the statute taken as a whole, but also is extremely far reaching in terms of the virtually untrammeled and unreviewable power it would vest in a regulatory agency.

See also Whitman v. American Trucking Associations, Inc., 531 U.S. 457, 121 S.Ct. 903, 909-10 (2001) ("Congress, we have held, does not alter the fundamentals of a regulatory scheme in vague terms or ancillary provisions – it does not, one might say, hide elephants in mouseholes."); *Sorenson v. Secretary of Treasury of U.S.*, 475 U.S. 851, 867 (1986) (Stevens, J., dissenting) ("I think 'it defies belief' to assume that a substantial number of legislators were sufficiently familiar with [Omnibus Budget Reconciliation Act of 1981] to realize that somewhere in that vast piece of hurriedly enacted legislation there was a provision that changed the 6-year-old Earned Income Credit Program.").

D. The PVPA Requires Disclosure, Including A Seed Deposit, And Under The Research Exemption Discloses To Others The Plant Variety's DNA Storehouse Of Information, Whereas Patent Law Precludes Others From Exploring Through Research The DNA Information Of A Plant Variety Whose Sexual Reproduction Is Claimed To Be Controlled By A Utility Patent.

Pioneer, again parrotted by its amici, argues that a plant breeder who seeks a § 101 utility patent to legally monopolize the act of propagating a seed grown plant must meet two different (and supposedly more difficult) requirements than the breeder who seeks a PVP certificate to monopolize the same act – a complete written description of the plant and a showing that the plant is "non-obvious." Pioneer, at 38; U.S., at 24-25; Cargill, at 16; ACPA, at 5-6; BIO, at 6-8; ASTA, at 6, 14-15. This argument fails for both legal and factual reasons.

First, the argument has no legal relevance even if it is factually true (which it is not). It has been shown that Congress directly considered, in 1930, 1952 and 1965-70, whether Title 35 patents should be available to protect seed grown plants. In 1930, Congress deliberated on whether to extend the Revised Statutes § 4886 (precursor of § 101) new protection of "plants" to the right to exclude sexual reproduction, and in 1965-70 whether to extend the protection afforded by plant patents (35 U.S.C. §§ 161-64) to the right to exclude others from propagating plants by sexual methods. In the end, Congress determined not to extend Title 35 patent rights to include the right to exclude sexual reproduction of seed grown plant varieties. Instead, it enacted a separate statutory scheme, the 1970 PVPA. Of course, Congress did not make that scheme identical to the utility or plant patent provisions of Title 35. Had it wished to do so, then it would have amended these provisions, as it did with the 1930 PPA, instead of enacting a separate statute. Nowhere in the briefs of Pioneer and its amici do they point to a deliberate Congressional decision that standards different than the PVPA standards may be used to grant the right to exclude sexual reproduction, that the research exception can be avoided, or that the seed saving exemption can be circumvented.[5] The differences in the statutes,

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[5] When the 1994 PVPA Amendments removed from 7 U.S.C. § 2543 the right of a farmer to sell saved seed, the House Report (Agricultural Committee) No. 103-699, Aug. 12, 1994 (To Accompany H.R. 2927), provided in Section 10, p. 17:

> It is not the intent of the Committee that deletion of the provision allowing the sale of saved seed to be viewed as a step toward the eventual end to the

summarized by Farm Advantage at pages 22-24 of its principal brief, prove Farm Advantage's position. The statutes in fact conflict and seed grown plants, the parts thereof and their seeds are subject to federal protection only under the PVPA.

Pioneer and its amici in any case base their argument on incorrect facts. The utility patent disclosure provision, 35 U.S.C. § 112, requires a complete written description of the patented invention. Congress relaxed this description requirement only in the case of plant patents. 35 U.S.C. § 162. Congress has not relaxed the written description requirement for an invention protected by a § 101 utility patent. It is the PTO, not Congress, that endorsed the substitution of a seed deposit for a written description to satisfy by proxy the written description requirement of § 112. Note that Pioneer's patents on the corn hybrids contain *no* disclosure of the hybrid's DNA in the written description (J.A., 31-32), and only a partial gene disclosure for its patents on the corn inbreds (J.A., 45). For Pioneer's corn hybrid patents, the PTO did not require a deposit of the hybrid's inbred parents or even require identification of the inbred parents and their breeding history. Pioneer's corn inbred patents also do not disclose their breeding history – i.e., how they were made.

For both its patented hybrid and inbred corn varieties, Pioneer purports to meet § 112's written description requirement by the deposit of seeds. (J.A., 39, 50.) Yet patent law prohibits another from experimenting on the

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traditional right of farmers to save seed for use on their own holdings. * * *

patented invention, and consequently one skilled in the art of plant breeding cannot recreate the patented plants simply from the existence of a seed deposit.[6] For example, a researcher is precluded by patent law from growing the deposited seeds and experimenting on the resulting plants by observing them and by cross-pollinating them with other plant varieties to study the results of this DNA interaction.

The PTO in essence has administratively amended the disclosure requirement of § 112 to make it somewhat follow the disclosure provision of the PVPA. That provision requires a written description that describes the protected plant variety in much the same manner that Pioneer's patented corn varieties are described in the patents-in-suit. 7 U.S.C. § 2422(2). Additionally, the PVPA requires a deposit of seeds from the protected variety. *Id.*, at § 2422(4); *see also* 7 C.F.R. § 97.6(d). The PVPA also requires that all known genealogy and breeding history be described in an application for plant variety protection. 7 U.S.C. § 2422(2). This crucial information is absent from the patents granted by the PTO to Pioneer. Pioneer and its amici's reliance on the written description requirement for utility patents in fact supports Farm Advantage's position.

Pioneer and its amici make another mistake of fact when they rely on the utility patent requirement of "non-obviousness." This requirement must be met by a breeder who seeks to patent an asexually propagated plant. 35

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[6] Amer. Crop Prot., 9-10; BIO, 11; U.S. 24, 25 n.12; *Roche Products, Inc. v. Bolar Pharmaceutical Co., Inc.*, 733 F.2d 858 (Fed. Cir.), *cert. denied*, 496 U.S. 856 (1984).

U.S.C. § 161. As it respects plants, "non-obviousness" equates with distinctiveness. The seed producing industry itself recognizes this. During the hearings on the Plant Variety Protection Act Amendments of 1993, the statement of the National Potato Council (H.R. 2927, at 95-104) provided (*id.*, at 101):

> A plant patent may be granted to anyone who invents or discovers and asexually reproduces a variety which is distinct, novel and non-obvious. In practice, the application of the criterion non-obviousness to plants seems to be linked to distinctiveness. For example, the candidate variety must be distinct by something more than a minor (cosmetic) characteristic.

The PVPA requires a breeder of a new variety of seed grown plant to show that the variety is "distinct." 7 U.S.C. § 2402(a)(2). The term "distinctiveness" in the PVPA is construed as follows:

> The distinctiveness of one variety from another may be based on one or more identifiable morphological, physiological, or other characteristics (including any characteristics evidenced by processing or product characteristics, such as milling and baking characteristics in the case of wheat) with respect to which a difference in genealogy may contribute evidence.

Id., at § 2401(b)(5). "Distinctiveness" is the PVPA's equivalent of the PPA's requirement of "non-obviousness." The requirements in practice are applied in a related and overlapping manner. Pioneer and its amici's reliance on this difference in wording as a factual matter is without substance.

E. The PVPA Includes Genetically Engineered Plants That Are Sexually Reproduced.

Amici Delta and Monsanto do raise an argument not put forth by Pioneer and the Solicitor General. It is that the term "variety" in the PVPA is not (necessarily) broad enough to cover all forms of sexually reproduced plants. The plants supposedly not included are those plant varieties that in part have been genetically engineered, and as contrasted with those plant varieties developed entirely by "classical" breeding techniques. Delta, at 4-14; Monsanto, at 4-7. These amici do not correctly characterize the PVPA's scope of coverage.

The word "variety" is defined in the PVPA as follows:

> The term "variety" means a plant grouping within a single botanical taxon of the lowest known rank, that, without regard to whether the conditions for plant variety protection are fully met, can be defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, distinguished from any other plant grouping by the expression of at least one characteristic and considered as a unit with regard to the suitability of the plant grouping for being propagated unchanged. A variety may be represented by seed, transplants, plants, tubers, tissue culture plantlets, and other matter.

7 U.S.C. § 2401(a)(9). The term "variety" is expansive; it expressly includes all plant groupings that fall "within a single botanical taxon of the lowest known rank." *Ibid.*

Contrary to Delta and Monsanto's assertion, the term "variety" expressly includes a seed grown plant that is developed by genetic engineering instead of through utilization of "classical" plant breeding techniques. The PVPA's infringement provisions apply to "any variety that is essentially derived from a protected variety. . . . " 7 U.S.C. § 2541(c)(1) (added by 1994 PVPA Amendments, Pub.L. 103-349, § 9(3)). The PVPA provides that any plant variety falling within the definition of "essentially derived variety" set out in 7 U.S.C. § 2401(a)(3) is not exempted merely because it has been genetically engineered. *Id.*, at § 2401(a)(3)(B). This section provides:

> Methods
>
> An essentially derived variety may be obtained by the selection of a natural or induced mutant or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, *transformation by genetic engineering*, or other method. [Emphasis added.]

Ibid. The PVPA covers the field of federal protection for obtaining a PVP Certificate holder's right to exclude others from sexually or tuber propagating a plant variety, even a variety created through the use of biotechnology. *Id.*, at §§ 2401(a)(6), (7) (definitions of propagation) and 2541 (acts of infringement by propagation).

To be commercially valuable, a plant developed in some part by genetic engineering must be propagated by sexual, tuber or asexual methods, whichever is most appropriate for that particular variety of plant. The PVPA encompasses all aspects of plant propagation, with the exception of the PPA carve-out for asexual reproduction. 7 U.S.C. § 2541(a)(9). A plant variety having a genetically

engineered input, just like an entirely classically bred plant variety, must be propagated to be valuable. A plant that cannot be economically reproduced has no value in the commercial crop market. The plant varieties that have a genetic engineering input are developed through classical plant breeding either before or after the genetic engineering, or both before and after the engineering event. The plant varieties for which Delta and Monsanto claim patent rights to control or prohibit their sexual reproduction are propagated by sexual means, in the same manner the plant varieties covered by the patents-in-suit issued to Pioneer are propagated. The right to exclude others from sexually reproducing these plant varieties, like Pioneer's patented plants, are exclusively protectable by federal law under the PVPA for they are sexually propagated.

CONCLUSION

A breeder who has developed and sexually reproduced a plant variety cannot obtain under 35 U.S.C. § 101 a patent granting the right to exclude others from sexually reproducing the plant variety, or from selling or using plant varieties reproduced sexually. Such a plant variety is subject to federal protection only under the PVPA. 7 U.S.C. § 2402(a). The Court should so hold, and declare each of the patents-in-suit invalid.

Respectfully submitted,

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IN THE
Supreme Court of the United States

J.E.M. AG SUPPLY, INC., FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT, KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,
Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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QUESTION PRESENTED

Whether plants developed by human intervention, and associated seeds and other plant parts, are patentable subject matter under 35 U.S.C. § 101.

CORPORATE DISCLOSURE STATEMENT

Pursuant to this Court's Rule 29.6, respondent states that it is a wholly owned subsidiary of E.I. du Pont de Nemours and Company.

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IN THE

Supreme Court of the United States

No. 99-1996

J.E.M. AG SUPPLY, INC., *et al.*,
Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF FOR RESPONDENT

STATEMENT

This case involves plants developed thorough extensive human efforts, providing substantial benefits for agriculture. The United States issued patents to protect the results of those efforts, applying the normal standards for utility patents. Both courts below upheld the patents, ruling that such plants are patentable subject matter like any other technological development.

A. Plant Reproduction

Plant reproduction (multiplication or propagation) is commonly divided into sexual and asexual methods. The same plant is often capable of reproduction in both ways, whether naturally or artificially. Practical considerations determine which method is used for commercial purposes.

Sexual reproduction involves fertilization, the union of male (pollen) and female (ovule) cells—gametes (or "germ" cells)—to produce a fertilized seed that can grow into the

plant. Self-fertilization occurs if the male and female gametes come from a single individual, with pollen fertilizing the ovules inside the flowers on the same individual. (For corn, pollen from the tassels at the top of the stalk may be deposited on the silks protruding from the corn ears, one silk leading to each ovule.) Cross-fertilization occurs if the gametes are from different individuals, even if genetically similar. A "hybrid" results from the cross-fertilization of plants that are of different varieties, *i.e.*, plant lines that are genetically distinct. *See* JA 29 (patent at issue); 1 W. Fehr, *Principles of Cultivar Development* 11-25 (1991).

In sexual reproduction, the sex cells may have different genetic makeup, because the chromosomes (even if from the same individual) may differ at various gene locations along the chromosome (there are roughly 60,000 gene locations in corn plants): one may contain the dominant version of the particular gene (*e.g.*, tall), the other the recessive (*e.g.*, short). For such "heterozygous" plants, sexual reproduction produces nonuniform offspring. In particular, the plant grown from hybrid seed will produce seeds of nonuniform characteristics, so that hybrids are not genetically stable after the first generation; as a result, seed from one year's hybrid crop cannot be used to re-grow the same hybrid crop, which instead requires seed from crossing the same parental lines that produced the hybrid seed in the first place. On the other hand, to produce "inbred" lines, a plant breeder, by repeated controlled fertilization over many generations, and with appropriate selection of offspring with the desired characteristics, can largely weed out undesirable traits and produce "homozygous" plants that have near-uniform genetic makeup in the desired characteristic. *See* JA 29; Fehr, *supra*, at 29, 34, 106-14, 428-38. Such plants are used as parental lines for producing hybrid seed.

Asexual reproduction is reproduction without fertilization, *i.e.*, without union of male and female cells. Some plants

(*e.g.*, some grasses, dandelions) reproduce this way in nature, such as by sending out runners along the ground, or putting out underground stems, that in turn produce new plants. *See* P. Raven, R. Evert & S. Eichhorn, *Biology of Plants* 179-80 (6th ed. 1999). Many other plants, however, even those which reproduce through fertilized seeds in nature, can be artificially reproduced without fertilization by established human-engineered methods, *e.g.*, grafting one piece of the plant onto a root piece, resulting in growth of a new plant. *See* S. Rep. 315, 71st Cong., 2d Sess. 1 (1930) ["1930 Senate Report"]; H.R. Rep. 1129, 71st Cong., 2d Sess. 1 (1930) ["1930 House Report"]; H. Hayes & R. Garber, *Breeding Crop Plants* 95 (2d ed. 1927) ("grafting, cutting, layering"). Except for inevitable (but unpredictable) mutations, asexual reproduction creates a genetic copy, or clone, of the parent. *Id.*

The very same plant variety may be reproduced in both ways. *See* U.S. Office of Technology Assessment, *Patenting Life* 79 (1989) ("Although crops can be classified by their natural reproductive processes, some crops can be propagated either sexually or asexually."). For some plants, such as strawberries, both methods occur naturally. *See* Raven, Evert & Eichhorn, *supra*, at 179-80, 255. For many others, human-aided asexual reproduction can be applied to clone plants that were initially developed through sexual breeding programs. Thus, a grape vine or an apple tree that produces seeds from sexual reproduction, and has been developed through hybrid cross-fertilization to bring out a particular feature, can be cloned by asexual methods to guarantee repetition in the offspring of the desired feature.[1] For particular plants, the

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[1] *See, e.g.*, 35 U.S.C. § 161 (referring to "hybrids" that have then been asexually reproduced); 1930 Senate Report at 3, 7 (discussing hybridization to produce plants to be protected); 1930 House Report at 4, 8 (same); H. Hayes & R. Garber, *supra*, at 13, 350-57 (discussion of crossing to produce new varieties that then "may be propagated

method of reproduction used by breeders, farmers, nurseries, and others depends as much on commercial and other practical considerations as on biological constraints.

B. Statutory Framework

For some plants, state trade-secret law provides a useful form of protection for plant breeders, though at a cost of curtailed public disclosure. The developer of a hybrid seed, for example, may hold secret the inbred-line parents needed to create new quantities of the hybrid seed. *See Pioneer Hi-Bred Int'l v. Holden Foundation Seeds, Inc.*, 35 F.3d 1226 (8th Cir. 1994); *Patenting Life* at 82 ("Historically, the hybrid corn industry has depended heavily on trade secret protection of parental lines.") (citation omitted). There are, in addition, three federal statutory regimes relevant to the protection of plant life, each involving different qualifications and different degrees of public disclosure.

1. Utility Patents: 35 U.S.C. § 101

Methods of breeding plants have long been protected, as processes, under Section 101 of the Patent Act of 1952, 35

asexually"); Plant Patent No. 2 (claimed new plant originated by artificial crossing); Plant Patent No. 6 (same); Fehr, *supra*, at 381-87; *see also* 1930 Senate Report at 5 ("theoretically under laboratory conditions it is probable that all plants can be asexually reproduced"); 1930 House Report at 6 (same); *In re LeGrice*, 301 F.2d 929, 1136 (CCPA 1962) ("The rose breeder strives to produce by sexual propagation a rose having the desired characteristics, after which this particular rose with the desirable characteristics is further propagated by asexual methods in which all of the characteristics of that one rose plant, and only that plant, are transmitted to the new plants derived by cutting, etc."); Rossman, *Plant Patents*, 13 J.P.O. Soc'y 7, 13 (1931) ("The cross-pollinization or hybridization of different kinds of seedlings produces the great majoriy of our new plants. They are created by the plant-breeder when he artificially fertilizes one variety with the pollen from another variety.").

U.S.C. § 101, and its predecessors.[2] Since at least 1985, when the Board of Patent Appeals and Interferences of the Patent and Trademark Office (PTO) decided *In re Hibberd*, 227 USPQ 443, following this Court's decision in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), the PTO has issued patents on plants themselves under Section 101.[3] The industry has relied on *Hibberd*: by 1998, more than 1600 patents with claims to "plants" had been issued. JA 21.

Section 101, except for the 1952 replacement of the term "art" with the term "process" (a change not relevant here), uses language that Congress enacted in 1793 and has carried forward without change since that time.[4] The 1952 Act, in particular, simply recodified the language without alteration. *Chakrabarty*, 447 U.S. at 308-09; *In re Bergy*, 596 F.2d 952, 973 (CCPA 1979), *aff'd*, 447 U.S. 303 (1980).[5] Section 101

[2] *See Plant Patents*, Hearing before the House Comm. on Patents, 71st Cong., 2d Sess. 5-6 (1930) ["1930 House Hearing"] (Commissioner of Patents: "For many years past patents have been granted for methods of grafting, etc., ..."); JA 52 (Boehm patent); JA 56 (Maan patent); JA 66 (Hayward patent).

[3] At least some "utility" patents on plants or seeds—specifically and separately claimed as the product of certain claimed breeding processes—were issued prior to 1985. *See* JA 52 (1936 Boehm patent, U.S. Patent No. 2,048,056); JA 56 (1979 Maan patent, U.S. Patent No. 4,143,486); JA 66 (1983 Hayward patent, U.S. Patent No. 4,406,086). Although petitioners suggested otherwise as to the Boehm patent in their Reply Brief at the petition stage (at 3-4), the numbering of the patents is enough to show them plainly to be utility patents, since plant patents are separately numbered, beginning with 1 after the 1930 and today reaching roughly 12,000.

[4] *See, e.g.*, Patent Act of 1793, ch. 11, § 1, 1 Stat. 318, 319; Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119; Patent Act of 1870, ch. 230, § 24, 16 Stat. 198, 201; Rev. Stat. § 4886; 35 U.S.C. § 31 (1946 ed.); H.R. Rep. 1923, 82d Cong., 2d Sess. 37-38 (1952) (quoting Section 101 predecessors).

[5] The 1952 committee reports specifically discuss the changes in language that were intended as substantive in what was otherwise

allows a patent, if other requirements are met, to any person who

> invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.

The patent, if obtained, broadly protects against unauthorized manufacture, use, sale, offer, or importation. *See* 35 U.S.C. §§ 154, 271.

The additional requirements that must be met to obtain a patent for subject matter within that broad class include the following: (a) usefulness, 35 U.S.C. § 101; (b) novelty, 35 U.S.C. § 102[6]; (c) non-obviousness in light of prior art, 35 U.S.C. § 103; (d) definiteness in the claims defining the protected inventions, 35 U.S.C. § 112, ¶ 2; (e) an enabling written description, *i.e.*,

> a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same,

35 U.S.C. § 112, ¶ 1; and (f) an identification of "the best mode contemplated by the inventor of carrying out his invention," 35 U.S.C. § 112, ¶ 1. For a patentee claiming biological materials to meet the demanding disclosure standards of Section 112, ¶ 1, it is often necessary to place samples of the materials on deposit in an authorized and

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generally a nonsubstantive recodification. H.R. Rep. 1923, *supra*; S. Rep. 1979, 82nd Cong., 2d Sess. (1952). There is no mention of any intended substantive change with respect to the language of Section 101 at issue. *See* H.R. Rep. 1923, at 6, 16-17.

[6] Section 102 includes various requirements that the invention not have been anticipated by certain prior art such as publications and patents, abandoned by the applicant, or invented by someone else. 35 U.S.C. § 102.

identified depository. 37 C.F.R. §§ 1.801-1.809; 3 D. Chisum, *Patents* § 7.03[5][b]; U.S. PTO, *Manual of Patent Examining Procedure* §§ 2401-2411.05 ["*MPEP*"]. Fulfilling Section 112's disclosure purpose, the PTO requires that the deposit, from the time of the patent's issuance, be available to any member of the public to ascertain fully the teachings of the patent. 37 C.F.R. § 1.808; *MPEP* § 2410.01.

2. Plant Patent Act of 1930: 35 U.S.C. §§ 161-164

Congress added a new form of protection in 1930, enacting the Plant Patent Act of 1930, ch. 312, 46 Stat. 376. Congress was informed that plants were not at the time qualifying for protection under the patent laws, based on a "belief" (not tied to any authoritative judicial construction) that plants were products of nature and, in addition, were "'not amenable to the 'written description' requirement" (then in Rev. Stat. § 4888 and now in 35 U.S.C. § 112, ¶1). *Chakrabarty*, 447 U.S. at 312; *see* 1930 Senate Report at 9 (letter from Secretary of Agriculture explaining that "the patent laws . . . at the present time are understood to cover only inventions or discoveries in the field of inanimate nature" and, also, required written description not understood to be available for plants); 1930 House Report at 10 (same); 1930 House Hearing at 5-7 (Commissioner of Patents memorandum). In response, Congress added new patent protection for certain plant varieties without the need to meet all the otherwise-applicable requirements of the patent laws. The provisions of that Act were re-codified in 1952, without substantive change, to appear at 35 U.S.C. §§ 161-164, and broadened twice thereafter (in 1954 and 1998). Patents issued under those provisions have been separately numbered since 1930, with the consecutive numbering now at roughly 12,000.

The Plant Patent Act originally authorized patents for those who have "invented or discovered and *asexually reproduced* any distinct and new variety of plant, other than a tuber-

propagated plant" (emphasis added), and Section 161 today reaches

> [w]hoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state.[7]

Administratively since the beginning, and statutorily since 1952, only a single claim identifying "the plant shown and described" has been allowed. 35 U.S.C. § 162; 37 C.F.R. § 1.164. Although the plant claimed may have been created by sexual reproduction and may be capable of further sexual reproduction, the patent applicant must have "asexually reproduce[d]" it at least once, ensuring that the characteristics that make it "distinct" were not an environmental accident but are genetically based, reproducible in a clone, hence characteristic of a new "variety." *See Dunn v. Ragin v. Carlile*, 50 USPQ 472 (Bd. Interf. Exam'rs 1941). Section 163 defines the scope of protection: it bars further cloning as well as associated activities (*e.g.*, using, selling, importing) involving the plant or its clone or, since 1998, flowers or other parts of the plant or its clone.[8]

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[7] The original 1930 language was written as a clause within Rev. Stat. 4886 following the language, quoted above, that is now in Section 101. *See* Pet. App. 42; Pet. Br. 17-18 n.5.

The language "including cultivated sports, mutants, hybrids, and newly found seedlings," and "other than . . . a plant found in an uncultivated state," were added in 1954. Pub. L. No. 775, ch. 1259, 68 Stat. 1190 (1954).

[8] *See* Pet. Br. App. 27a (current Section 163); Pet. App. 44 (pre-1998 Section 163). One textual point is worth noting. Whereas current Section 163 says that the grant "shall *include*" the right to exclude others from the specified activities, the pre-1998 version said that the grant "shall *be of*" that right. 35 U.S.C. § 163 note; Pet. App. 44 (1952 version). The original 1930 Act, like the current version, used "include" language: "including in the case of a plant patent the exclusive right to asexually

A broader class of plants may be awarded a plant patent than could qualify for a utility patent. In particular, under Section 162, protection is afforded to plant varieties that cannot be adequately described in compliance with Section 112. 35 U.S.C. § 162 ("No plant patent shall be declared invalid for noncompliance with section 112 of this title if the description is as complete as is reasonably possible."). Because of the relaxed disclosure standard, plant patents (unlike utility patents) are typically very short documents, simply identifying the distinguishing characteristics and claiming the plant so identified, and the PTO does not require a deposit. *MPEP* § 2403.02.[9]

3. Plant Variety Protection Act of 1970: 7 U.S.C. §§ 2321-2582

The 91st Congress added yet another new protection for plants in 1970. This legislation followed a change in congressional understanding about the general ability of

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reproduce the plant." *See* Pet. Br. 18 n.6 (quoting Rev. Stat. § 4884); Pet. App. 42. But the 1930 committee reports state: a "plant patent covers only the exclusive right of asexual reproduction." 1930 Senate Report at 5; 1930 House Report at 6.

In 1995, the Federal Circuit held that plant patents were limited to the single distinguished individual and "its asexually reproduced progeny," basing that holding on its construction of Section 163 and Section 161, which, the court concluded, did not use "variety" to refer to a characteristic-defined *category* of plants (as does the Plant Variety Protection Act, discussed below). *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567-68, 1569-70 (Fed. Cir. 1995).

[9] Section 161 does not identify non-obviousness as a requirement, and the 1930 committee reports furnish grounds to doubt that such a requirement was intended. *See* 1 D. Chisum, *Patents* § 1.05[1][b][vi]. Nevertheless, Section 161 has, since 1952, stated that Title 35 applies "except as otherwise provided," and one important Plant Patent Act decision has required non-obviousness. *See Yoder Bros., Inc. v. California-Florida Plant Corp.*, 537 F.2d 1347, 1379 (5th Cir. 1976); *see also MPEP* § 1608.

sexual reproduction to breed plants "true to type." In 1930, the congressional committees had stated their understanding that only asexual propagation (maintaining genetic identity) reliably enough reproduced in progeny the characteristics making the plant variety distinctive. 1930 Senate Report at 4; 1930 House Report at 4-5. In 1968, a Senate subcommittee heard testimony that plant breeding techniques had developed so that sexual propagation now could, as a practical matter, reproduce distinguishing characteristics in plant populations.[10] *See Chakrabarty*, 447 U.S. at 313 (whereas 1930 Congress believed "new varieties could not be reproduced true-to-type through seedlings," "[b]y 1970, however, it was generally recognized that true-to-type reproduction was possible" through seed-based propagation).

The 91st Congress, in 1970, added new protection outside the Patent Act, enacting the Plant Variety Protection Act (PVPA), Pub. L. No. 91-577, 84 Stat. 1542, codified as amended at 7 U.S.C. §§ 2321-2582, to be administered by the Secretary of Agriculture. Under the PVPA, a certificate can

[10] *See Patent Law Revision*, Hearings before the Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm. On the Judiciary, 90th Cong., 2d Sess. 640 (1968) ["1968 Senate Hearings"] (While the "improvement of crop varieties through plant breeding . . . was still in its infancy" in 1930, it "has evolved as an industry largely since 1930. Improved breeding techniques and seed multiplication procedures have developed whereby the varietal identity of a sexually reproduced plant can be maintained intact over an extended period of time."); *id.* at 651 ("Improved and commonly known plant breeding techniques developed in recent years have provided numerous varieties of sexually reproduced plants which are also capable of reproducing true to form, so that the characteristics of the plant variety are maintained in the progeny."); *id.* at 655, 660-70, 748-51, 785. This evidence was accompanied by other testimony, including from the Secretary of Agriculture and Commissioner of Patents, expressing concern that variability remained significant and that, as a result, "the value of patents for sexually reproduced plants would be questionable, and their enforcement uncertain." *Id.* at 885; *see, e.g., id.* at 715-18, 799, 862-69, 873-76.

be issued for a broader class of newly developed plants than can qualify for patent protection. 1 D. Chisum, ***Patents*** § 1.05[2][a][i] ("The certification standards of the PVPA are less rigorous than the standards for utility, design and plant patents."). In the original Act, a certificate was available for any "novel variety of sexually reproduced plant (other than fungi, bacteria, or first generation hybrids)." Pub. L. No. 91-577, § 42(a), original 7 U.S.C. § 2402(a).[11] A "novel variety" was one with "distinctness" (it differs in *any* characteristic from plants previously known), "uniformity" across a population (any variations are "describable, predictable, and commercially acceptable"), and "stability" (its "essential and distinctive characteristics" are passed on to progeny "with a reasonable degree of reliability" when sexually reproduced). *Id.* § 41(a), original 7 U.S.C. § 2401(a). The PVPA has from 1970 defined sexual reproduction to be seed-based reproduction. *Id.* § 41(f), original 7 U.S.C. § 2401(b). No requirement of nonobviousness or utility or the kind of written description required by 35 U.S.C. § 112 has ever been part of the PVPA.

In 1994, the 103rd Congress further broadened the eligibility for PVPA protection, seeking (among other things) to conform to the International Convention for the Protection of New Varieties of Plants of 1991 (known as the "UPOV" convention, based on the French name). *See* H.R. Rep. 103-699 at 7 (1994). The basic standards of novelty, distinctness, uniformity, and stability remain, but the PVPA, while continuing to exclude fungi and bacteria, no longer excludes first-generation hybrids but now covers any sexually reproduced variety and, in addition, covers tuber propagated plant varieties—notably, potatoes. 7 U.S.C. § 2402.

[11] The 1970 Act also contained an exemption for "okra, celery, peppers, tomatoes, carrots, and cucumbers." Pub. L. No. 91-577, § 144, original 7 U.S.C. § 2583. The exemption was repealed by Pub. L. No. 96-574, § 20, 94 Stat. 3352.

"Variety" is now defined (in terms of any genetically based characteristics); "new" is used in place of the original "novel"; and rules governing determinations of priority are set forth. *See, e.g.*, 7 U.S.C. §§ 2401(a) & (b), 2402(a)(1) & (2), 2425. Although an applicant seeking a certificate (through what is mostly a fill-in-the-boxes enumeration of the distinguishing characteristics) must submit seeds of the variety (7 U.S.C. § 2422(4); 7 C.F.R. § 97.6), the more limited disclosure requirement has meant that the deposit is not accessible to the public (as petitioners do not deny, Pet. Br. 29-30 n.10).

For the wide range of certified plants, the PVPA provides, in general, a broad grant of exclusive rights and a related scope of protection. "Infringement" includes unauthorized reproducing, selling, offering for sale, importing, exporting, sexually multiplying for marketing, and using for "production" of a new variety. 7 U.S.C. §§ 2483 (grant), 2541 (infringement); *id.* § 2401(a)(3) (definition); *see* Pub. L. No. 91-577, §§ 83, 111.[12] Since 1994, the protection also has included certain actions going beyond the certificated variety itself, reaching, for example, a variety "essentially derived" from the certificated one. 7 U.S.C. §§ 2401(a)(3), 2541(c).

The infringement provision explicitly recognizes that the class of PVPA-covered plants includes plants that can qualify for a plant patent under 35 U.S.C. §§ 161-164 and that even asexual reproduction is generally a PVPA infringement. Section 2541, after listing various acts that constitute infringement, adds that it is also infringement for anyone without authority to do those acts "even in instances in which the variety is multiplied other than sexually, except in

[12] Like patents at the time, PVPA certificates originally lasted for 17 years from issue. Pub. L. No. 91-577, § 83(b), original 7 U.S.C. § 2483(b). The term was lengthened to 18 years in 1980. Pub. L. No. 96-574, § 14, 94 Stat. 3350. In 1994, the term was generally lengthened to 20 years (and 25 years for trees and vines). 7 U.S.C. § 2483(b).

pursuance of a valid United States plant patent." 7 U.S.C. § 2541(a)(9). That provision acknowledges that the same plant, being capable of both sexual and asexual reproduction, may qualify for both PVPA and plant-patent protection.[13]

The protections of the PVPA, though broad, are in some respects narrower than the protection for utility patents. For example, the certificate holder is not granted protection against others' use of the variety to "develop[]" (as opposed to "produce") a "hybrid or different variety therefrom." 7 U.S.C. §§ 2483(a)(1), 2541(a)(4); Pub. L. No. 91-577, §§ 83(a), 111(4), original 7 U.S.C. §§ 2483(a)(1), 2541(a)(4). Relatedly, use and reproduction of a certificated variety for "plant breeding or other bona fide research" is not infringement. 7 U.S.C. § 2544; Pub. L. No. 91-577, § 114, original 7 U.S.C. § 2544. In addition, unless sexual reproduction as a step in marketing is involved, or production of a hybrid or different variety is involved, farmers may "save seed" produced by plants grown from seed initially acquired for seeding purposes and use it to replant their own fields (or sell for non-reproduction purposes through usual channels).

[13] Whether the same plant could actually *obtain* both forms of protection is unclear, given that each grant would generally be prior art with respect to the other, so the real-world effect of the "except" clause as a "carve-out" from what is otherwise expressly defined as infringement (Pet. Br. 21) is unclear. *See* 1 D. Chisum, *Patents* § 1.05[2][d][i]. (The "except" clause was not in the original 1970 bills, *see Plant Variety Protection*, Hearing before the Subcomm. on Departmental Operations of the House Comm. on Agriculture, 91st Cong., 2d Sess. 102 (1970) ["1970 House Hearing"]; *Plant Variety Protection Act*, Hearing before the Subcomm. on Agricultural Research and General Legislation of the Senate Comm. on Agriculture and Forestry, 91st Cong., 2d Sess. 37 (1970) ["1970 Senate Hearing"]; the clause appeared in the legislation as reported from committee, *see* H.R. Rep. 91-1605 at 11 (1970) ["1970 House Report"]; S. Rep. 91-1138 at 12 (1970).) What is clear is the ability to qualify under both statutory regimes and the general PVPA protection against asexual as well as sexual reproduction.

7 U.S.C. § 2543; *see Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995). The original 1970 Act also allowed farmers to sell such saved seed to other farmers for replanting (Pub. L. No. 91-577, § 113, original 7 U.S.C. § 2543), but the 1994 Congress broadened the PVPA protection by deleting that exemption. *See* H.R. Rep. 103-349 at 11, 17-18 (1994). Finally, private, noncommercial performance of any otherwise-infringing activity is not infringement. 7 U.S.C. § 2541(e).

C. This Litigation

Respondent Pioneer (founded in 1926 by Henry A. Wallace, later Secretary of Agriculture and Vice-President) obtained various utility patents on hybrid and inbred lines of corn. Petitioners, without authorization, sold patented hybrid seed. The courts below rejected petitioners' invalidity argument that the patents claimed matter outside the coverage of Section 101.

1. Pioneer's Patents

In the early 1990s, Pioneer applied for various patents involving certain new varieties of corn (both hybrid and inbred), which, in ordinary commercial practice, is reproduced sexually—by planting seeds. Examples are reproduced at JA 28-39 (hybrid) and JA 40-50 (inbred), issued in 1996. The patents provide lengthy disclosures of the means of plant breeding, the specific features of the variety, and their useful characteristics compared with other varieties as measured in numerous important ways. JA 29-39, 41-50. They identify the American Type Culture Collection (ATCC) depository in Rockville, Maryland, where the public, without restrictions, has access to the samples deposited here. JA 39, 50.

The hybrid-line patent in the appendix claims the plant designated by the Pioneer name (3394) and ATCC deposit number and any plant "having all [its] physiological and

morphological characteristics," as well as certain "tissue culture[s] of regenerable cells" of the plant, a plant regenerated from such cells, and seed produced by the designated hybrid corn plant. JA 39. The inbred-line patent in the appendix claims the seed designated by the Pioneer name (PHP38) and ATCC number, "[a] corn plant produced by the seed," specifically "[a]n inbred corn plant having all the physiological and morphological characteristics" of such a plant, certain "tissue culture[s] of regenerable cells" of the plant, and a plant regenerated from such cells. JA 50. Although the claims have not been judicially construed, the specification of the inbred-line patent states that it "relates to," among other things, "hybrid corn seeds and plants produced by crossing the inbred line PHP38 with another corn line or a related species." JA 42. Petitioners, in their answer in this litigation, acknowledged that "[t]he patents that claim inbred corn lines as the invention alleged that the invention . . . relates to hybrid corn seeds and plants produced by crossing the particular inbred line with another corn line." JA 17; *see, e.g.*, U.S. Patent No. 5,689,034, col. 28 (claim 13).

2. District Court Proceedings

In 1998, Pioneer brought this action for patent infringement against petitioners. JA 6. The complaint lists 17 patents, identified as covering ten named hybrids and certain "associated" patents, some of them naming inbred lines (because inbred-line patents may cover hybrids produced from the named inbreds). JA 8-9; *see also* JA 27. The complaint alleged that Pioneer licensed the seeds "solely for use 'to produce grain and/or forage,'" not for any sale by the licensee. JA 10; *see* JA 51 (license on seed bag). The complaint asserted that petitioners are "infringing one or more" of the identified patents by "making, using, selling, or offering for sale corn seed of the above-referenced hybrids." JA 10.

Petitioners' answer, though generally denying infringement, did not deny that they were selling hybrid seed covered by Pioneer patents. JA 12-17. Instead, they stated a defense (and counterclaim) of patent invalidity, on a single ground: "corn (maize) plants are not patentable subject matter within the scope of 35 U.S.C. § 101." JA 14; *see* JA 17. Although petitioners stated a number of other defenses (false marking, failure to seek a PVPA certificate for the hybrid lines, acquiescence or laches, waiver, and estoppel), petitioners did not assert invalidity of the patents on any other ground—*e.g.*, novelty, utility, nonobviousness, adequate written description. JA 14-19.[14]

Petitioners moved for summary judgment on the Section 101 invalidity ground. The record on that motion included the several pre-1985 patents on plants or seeds that are in the appendix (JA 52-69), an affidavit reporting a database survey showing more than 1600 utility patents involving "plants" in their claims as of 1998 (JA 20-22), and evidence that petitioners did resell Pioneer seed despite the license restriction to using seed to produce grain or for forage (JA 23-26). The district court, noting the absence of any factual disputes, denied the motion (Pet. App. 13-39), conducting a detailed analysis to reject petitioners' contention that the

[14] Although petitioners seem to suggest that Pioneer's patents fail to make an adequate disclosure (Pet. Br. 29-30 n.10), they have not so alleged in this litigation. In any event, the only issue presented is validity under Section 101—which must be decided by assuming that all requirements for adequate disclosure will be duly enforced when properly raised. In the court of appeals, when petitioners "argue[d] that the specifications of Pioneer's patents are not enabling" and "criticize[d] the written description and the utility of the deposits," the court said: "These issues were not decided by the district court, and are not before us." Pet. App. 9.

Plant Patent Act and the PVPA "are the exclusive federal statutory mechanisms for plants covered by those acts." *Id.* at 23.[15]

The court observed that the broad language of Section 101, on its face and as construed by this Court in *Chakrabarty*, readily embraces plants (*id.* at 21-22) and that petitioners did not contend otherwise, but argued simply that the Plant Patent Act (PPA) and PVPA required a different conclusion. *Id.* at 22-23. Petitioners, however, did "not point to any specific language in the PPA or the PVPA" that "restrict[s] the scope of the patentable subject matter under § 101." *Id.* at 23. And the legislative histories of the relevant statutes made clear that, while committee reports may reflect a *belief* that utility patents were unavailable, "there is nothing in those legislative histories from which one could conclude that Congress intended to remove from the already in place protection of § 101 any subject matter already within the scope of that section." *Id.* at 28. The court noted, moreover, the statement from S. Rep. 91-1246 at 3 (1970) that the 1970 PVPA "does not alter protection currently available within the patent system" and the fact that some utility patents on plants were issued prior to 1970 "where inventors showed they could define a reproducible plant meeting" the description requirements of Section 112. *See* Pet. App. 28, 29 (citing Boehm patent, at JA 52). The court concluded: "In passing the PVPA and [Plant Patent Act], Congress maintained the broad language of § 101 in order to recognize, reward, and encourage developments in plant breeding that were capable of someday meeting the enablement requirements." Pet. App. 30.

[15] The inbred lines identified in the "Inbred Corn Line" patents are also the subject of PVPA certificates. Pet. Br. 5 (citing district court transcript).

The court next rejected petitioners' argument "that there has been an implicit repeal of a portion of 35 U.S.C. 101 because of an irreconcilable conflict" between utility patent coverage and the PVPA. Pet. App. 30. Citing the demanding standards applicable to such an argument, the court concluded that petitioners fell "far short of what would be required to find an irreconcilable conflict or positive repugnancy." *Id.* at 31-32. In particular, while the scope of protection is broader for utility patents, "the legal standards that must be satisfied to receive a utility patent"—*e.g.*, non-obviousness, the extent of the disclosure—are more stringent than for a PVPA certificate. *Id.* at 32-33. The court noted that the PTO, in its 1985 *Hibberd* decision, had likewise concluded that the different qualifications for coverage meant that there was no irreconcilable conflict between the statutory regimes giving different coverage. *Id.* at 34-35. Observing that Congress has not repudiated *In re Hibberd* even though it has amended the Patent Act numerous times since 1985 (*id.* at 36), and that *Chakrabarty* rejected the view of the Plant Patent Act and PVPA (similar to petitioners') set forth in Justice Brennan's dissent (*id.* at 37-39), the court concluded: "At no place in any of the statutes does it say that seed corn plants cannot be given a patent" or, indeed, that "you cannot have both patent and PVPA protection." *Id.* at 39.

3. Court of Appeals Decision

On an interlocutory appeal certified under 28 U.S.C. § 1292(b) (*see* Pet. App. 10-12), the court of appeals affirmed, substantially relying on the district court's analysis. Pet. App. 1-9. Noting the breadth of Section 101 as construed in *Chakrabarty*, the court observed that petitioners "do not dispute that the subject matter of the patents in suit is within the scope of the *Chakrabarty* decision." *Id.* at 4. The court explained that, while plants were once "deemed" unpatentable as "'products of nature'" and incapable of adequate description, the former objection had been invalid at

least since *Chakrabarty* and "precision of description is no longer an insurmountable obstacle, due both to rules authorizing the deposit of new species in publicly available depositories, and advances in botanical understanding and analysis." *Id.* at 5. "Although there remain the traditional categories that have never been viewed as patentable subject matter, *viz.*, laws of nature, natural phenomena, and abstract ideas, the policy underlying the patent system fosters its application to all areas of technology-based commerce." *Id.* at 5.

The court rejected petitioners' reliance on the PVPA to overcome Section 101. It explained that plants are not excluded from Section 101 just because "the PVPA Congress [may have] believed that seed-grown plants were not included in the patent statute (*id.* at 8) and that "the PVPA does not purport to remove plants from the patent statute" (*id.*). Moreover, "the asserted conflict" between patent coverage and PVPA coverage "is simply the difference in the rights and obligations imposed by the two statutes." *Id.* at 9. Thus, not having been cut back by another enactment, "patentable subject matter under 35 U.S.C. § 101 includes seeds and seed-grown plants." *Id.*

SUMMARY OF ARGUMENT

Diamond v. Chakrabarty, 447 U.S. 303 (1980), conclusively establishes that the "plain meaning" of the language enacted by Congress in 1793 and now in Section 101, which covers both "manufacture[s]" and "composition[s] of matter," embraces anything made with human intervention. 447 U.S. at 314-15. The plant life claimed in Pioneer's patents is squarely within that judicially declared plain meaning. To show that Section 101 is inapplicable, therefore, petitioners must demonstrate that Congress elsewhere has taken action that overrides the plain meaning of Section 101. Congress has not done so.

Neither the Plant Patent Act nor the PVPA alters Section 101. Likewise, their legislative histories evince no intent to limit the meaning of the terms "manufacture" and "composition of matter" to some particular view at some particular time. Whatever Members of Congress believed about the coverage of that language at any given time, no Congress has done anything to limit such coverage or even stated an intent to establish a limited scope to Section 101. In particular, when the 1930 Congress added the "plant" phrase to the existing terms, those terms already overlapped, and the patent law used no "definitions" to broaden the scope of statutory terms, so the addition of separate "plants" language in no way implied that the existing terms could not embrace plants. To the contrary, as *Chakrabarty* itself establishes, the congressional intent in 1930 was entirely in the direction of adding protection by *repudiating* the notion that patentable subject matter, as then understood, somehow excluded human-developed plant life. The 1970 Congress likewise only added coverage and said nothing to preclude giving Section 101 the plain meaning, embracing plant life, that this Court finally confirmed in *Chakrabarty*.

Petitioners' argument for limiting Section 101, therefore, must come down to establishing an actual conflict between its plain meaning and what Congress did in the PVPA or Plant Patent Act. Such a conflict was critical even in the authorities petitioners invoke, *United States v. Estate of Romani*, 523 U.S. 517 (1998), and *FDA v. Brown & Williamson Tobacco Corp.*, 120 S. Ct. 1291 (2000), and a still more demanding standard—the irreconcilable conflict required for an implied repeal—properly applies in this case, because the statutory meaning sought to be overriden here (unlike in petitioners' authorities) is both plain and already judicially declared. In any event, no inconsistency is present at all. Conferring somewhat lesser protections on a broader class of subject matter, including plants that do not meet the full

qualifications for utility patent protection, is consistent with conferring somewhat stronger protections for the narrower class that fully meets all such requirements.

In the years since *Hibberd*, not only has the industry relied on the availability of utility patents, but Congress itself has recognized and ratified, as consistent with its other enactments, the availability of utility patent protection for plants. The legislative history in the 103rd Congress, which enacted the comprehensive 1994 amendments to the PVPA, repeatedly recognizes the existence of utility patent protection for plants and not only fails to express a perception of inconsistency but explains the basis for consistency: the qualifications to obtain (weaker) PVPA protection are laxer than for (stronger) utility patent protection. And in 1999, Congress took affirmative action, by amending 35 U.S.C. § 119, to expand the rights of the holders of utility patents covering plants. The coverage of plants by Section 101, in sum, has been confirmed, rather than undermined, by subsequent congressional action.

ARGUMENT

The language of Section 101, as authoritatively construed in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), covers the plant life claimed in the patents at issue. That coverage has not been curtailed by the other congressional enactments on which petitioners rely, which are not inconsistent with Section 101 coverage of plant life. This construction, moreover, has been ratified by Congress. Accordingly, as a matter of pure statutory construction—and in any event as a reasonable statutory construction by the several responsible federal agencies, which recognize, and have issued patents and PVPA certificates in recognition of, the consistency of the several statutory regimes (*see Christensen v. Harris County*, 529 U.S. 576 (2000) (multiple bases for deference); Pet. Br. 14 (discussing issue in context set by *Chevron*,

U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837 (1984))—Section 101's coverage of Pioneer's patents should be affirmed.

I. THE STATUTORY SUBJECT MATTER SET FORTH IN SECTION 101, AS THAT PROVISION WAS PROPERLY CONSTRUED IN *CHAKRABARTY*, COVERS PLANT LIFE

The 1793 Congress enacted, and Congress has since left in place, language (now in Section 101) that was intentionally broad, establishing a basic charter covering the full range of human-made inventions. This Court's decision in *Chakrabarty* definitively establishes the plain meaning of that language, which just as plainly embraces the subject matter at issue here: a plant bred by human effort is a "manufacture" or "composition of matter." 35 U.S.C. § 101. Petitioners present no serious argument to dispute the construction of the "manufacture [or] composition of matter" language or its application to plant life.

In *Chakrabarty*, holding that living microorganisms come within Section 101, this Court explained that the words of Section 101 must be given their ordinary meaning, not limited by restrictions that Congress has not expressed. 447 U.S. at 308. The Court reiterated the proper construction of "manufacture" "in accordance with its dictionary definition to mean 'the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery.'" *Id.* (quoting *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11 (1931)). The Court likewise reiterated the proper construction of "composition of matter" "consistent with its common usage to include all compositions of two or more substances . . . and all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids,

powders or solids." *Id.* (internal quotation marks omitted). The Court concluded that those "expansive terms" were plainly meant to "be given wide scope," citing legislative history from the 1952 recodification indicating "that Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Id.* at 308-09 (quoting 1952 Senate Report at 5 and 1952 House Report at 6).

The Court noted that the field of human-made inventions had long been defined by reference to what it did not encompass—"laws of nature, physical phenomena, and abstract ideas," so that, in particular, "a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter." 447 U.S. at 309. But where human intervention has gone well beyond any "find" in nature, the invention is on the human-made side of the Section 101 line even though made of natural, indeed of living, matter (including microorganisms, which reproduce). *Id.* at 309-10. The Court further stressed the breadth of the plain meaning of "manufacture" and "composition of matter" by explaining that those terms were broad, *not* ambiguous (*id.* at 315),[16] and that such breadth of meaning was part of the very policy of patent law: to protect the unanticipated (*id.* at 315-16). Expressly rejecting the argument that a new congressional action should be required to address policy issues specific to the area before the plain meaning would

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[16] *See PGA TOUR, Inc. v. Martin*, No. 00-24, slip op. at 27 (May 29, 2001) ("'the fact that a statute can be applied in situations not expressly anticipated by Congress does not demonstrate ambiguity. It demonstrates breadth.'"), quoting *Pennsylvania Dept. of Corrections v. Yeskey*, 524 U.S. 206, 212 (1998); *Barr v. United States*, 324 U.S. 83, 90 (1945) ("if Congress had made a choice of language which fairly brings a given situation within a statute, it is unimportant that the particular application may not have been contemplated by the legislators") (citing *Browder v. United States*, 312 U.S. 335, 339 (1941), and *Puerto Rico v. Shell Co.*, 302 U.S. 253, 257 (1937)).

apply to living matter (*id.* at 316-17),[17] the Court concluded that Section 101 is an intentionally broad provision that, in accord with its terms' "plain meaning," embraces any human-made matter. *Id.* at 314, 315; *see Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 154 (1989) ("the potentially patentable includes 'anything under the sun that is made by man'") (quoting *Chakrabarty*, 447 U.S. at 309).[18]

Plant life like that claimed in Pioneer's patents clearly involves human-made technology within the plain, broad

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[17] This same argument is now made by petitioners (Pet. Br. 47-49) and their *amici* (American Corn Growers Ass'n *Amicus* Br. 13-30; Pollack *Amicus* Br. 2-14), as it can almost always be argued that one particular technology requires a different policy approach. But, as *Chakrabarty* establishes, Congress has already made the categorical judgment that innovation is best promoted by the private incentives created by the patent system, in all areas covered by Section 101's language. That judgment governs unless Congress changes it. Concerns about alleged undue concentration in a particular industry (raised by the American Corn Growers Association) raise an antitrust issue not relevant here.

We note that *amici*'s suggestion of higher seed prices (American Corn Growers Ass'n *Amicus* Br. 26) is deficient on its face. It does not control for inflation or for increased yield per acre—or, apparently, for increased amounts of seed used per acre.

[18] The Court in *Chakrabarty* declined to compartmentalize the terms of Section 101, holding instead that the living matter at issue came within the "manufacture [or] composition of matter" language of Section 101, without need to separate the categories or identify which term applied. The Court of Customs and Patent Appeals, in the decision affirmed by *Chakrabarty*, explained that the categories within Section 101 are *not* distinct. *In re Bergy*, 596 F.2d at 985 ("Chemical compounds . . . have unquestionably always been regarded as both 'manufactures' and 'compositions of matter' . . . ."); *id.* at 974 n.11 (quoting P.J. Frederico, principal drafter of the 1952 Act: "'"In the statute there is no basis for assuming that these [four terms—machine, manufacture, composition of matter, and process or art] represent four separate compartments of invention. Rather does the use of the four terms represent an effort to indicate the general industrial boundary of the single field of patentable invention." ' ").

meaning of Section 101 as confirmed by *Chakrabarty*. The 1930 congressional committees explained in clear terms that the human intervention required in developing and breeding new varieties of plants out of nature's material is no different in kind from the human intervention required in developing new chemicals out of nature's material. 1930 Senate Report at 7; 1930 House Report at 7-8. That elementary proposition is equally true whether the plant produced (commonly through time-consuming and labor-intensive sexual propagation by crossing and selection) is thereafter routinely propagated by asexual or sexual methods. The human intervention can be as substantial an undertaking as technological development in other fields. *See* 1994 House Report at 9 ("The development of new plant varieties is arduous, time-consuming, and costly. Many years must be spent in the development of a single new variety, with no guarantee of its success or profit."); *see id.* at 17-18 (same, quoting Department of Agriculture representative); Rossman, *Plant Patents*, 13 J.P.O. Soc'y 7, 10 (1931) ("It often takes from ten to fifteen years to perfect a new plant so that it can be placed on the market.").

Chakrabarty itself confirms that plants bred with human assistance are not on the "products of nature" side of the Section 101 line separating unpatentable from patentable subject matter. The Court explained that the 1930 congressional committees *rejected* "the belief that plants, even those artificially bred, were products of nature for purposes of the patent law" (447 U.S. at 311), and the Court noted that the committees "explained at length [their] belief that the work of the plant breeder 'in aid of nature' *was* patentable invention" (*id.* at 312 (emphasis added)). Immediately after quoting the 1930 committees' specific distinction between a merely found mineral and "'a plant discovery resulting from cultivation'" (*id.* at 313, quoting 1930 Senate Report at 6 and 1930 House Report at 7), the Court adopted what Congress "recognized [as] the relevant distinction"—"not between

living and inanimate things, but between products of nature, whether living or not, and human-made inventions." 447 U.S. at 313. Both Congress and this Court have thus made clear that plants are on the protectable side of that distinction.

Petitioners make essentially no attempt to deny that the language in Section 101, as enacted by Congress in 1793 and left in place since then, has properly been given its plain meaning to cover anything made by humans and that plant life is within that meaning. Petitioners' only real suggestion to the contrary (Pet. Br. 32-33) is their reliance on a footnote in *In re Bergy* stating that the authors of the "anything under the sun that is made by man" statement in 1952—which appeared in the 1952 committee reports and in earlier testimony by P.J. Federico, "a principal draftsman of the 1952 recodification" (*Chakrabarty*, 447 U.S. at 309 & n.6)—"realized that Congress did not intend the term 'manufacture' in § 101 to include plants." *In re Bergy*, 596 F.2d at 987 n.25. But that pre-*Chakrabarty* statement cannot conceivably override the plain meaning of Section 101 as authoritatively construed in *Chakrabarty*.

First, the statement is not, and does not quote or cite, anything said at the time of the 1952 Patent Act declaring an intent not to cover plants in Section 101; it is therefore not "legislative history" in the usual sense, *i.e.*, a contemporaneous internal statement about the meaning of language about to be adopted (the only statements that can inform any vote in Congress). After-the-fact attributions of intent by participants in the original proceedings (commonly Members or committees of Congress) have repeatedly been denied significance by this Court. *See Secretary of the Interior v. California*, 464 U.S. 312, 331 n.15 (1984); *Russello v. United States*, 464 U.S. 16, 26 (1983); *Railroad Reorganization Act Cases*, 419 U.S. 102, 132 (1974); *United States v. Price*, 361 U.S. 304, 313 (1960). Second, the *Bergy* footnote, by its terms, discusses only "manufacture"; it does not even address

"composition of matter"—and hence, taken at face value, does not limit Section 101's overall coverage. That limitation cannot be disregarded: the *Bergy* opinion carefully refers to *both* "manufacture" and "composition of matter" everywhere else it discusses the coverage of living matter by Section 101, including in the passages immediately before and immediately after the footnote. 596 F.2d at 975, 977, 978, 979, 985, 987.[19] Not surprisingly, then, the footnote finds no counterpart in this Court's decision in *Chakrabarty*, which stated the broad conclusion that Section 101 has a plain meaning that embraces any product produced through human intervention—a conclusion that embraces the plant life here.

II. CONGRESS DID NOT NEGATE SECTION 101'S COVERAGE IN EITHER THE PLANT PATENT ACT OR THE PLANT VARIETY PROTECTION ACT, BOTH OF WHICH ARE CONSISTENT WITH SECTION 101 COVERAGE OF PLANT LIFE

To overcome the straightforward application of the language of Section 101, as definitively construed in *Chakrabarty*, petitioners must identify some later enactment that requires modification of Section 101's coverage. Petitioners, however, cannot identify in any subsequent enactment, or its legislative history, an expression of intent to limit such coverage, so they must rest their case on an argument that the Plant Patent Act and the PVPA necessarily effected an implicit override of the naturally broad meaning of Section 101 as established by this Court in *Chakrabarty*. But there simply is no inconsistency between the enactments, and petitioners' effort to escape the judicially confirmed plain meaning of Section 101 must fail.

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[19] Judge Rich, the author of *Bergy*, later wrote the Federal Circuit's opinion in *Imazio* and there cited *In re Hibberd* without disapproval. *See* 69 F.3d at 1563.

A. Congress Has Not Acted Or Expressed An Intent To Limit Section 101

Although petitioners must overcome Section 101's plain meaning as confirmed in *Chakrabarty*, they cannot cite any act or statement establishing a congressional intent to alter Section 101's meaning. Most importantly, they do not and cannot point to any congressional modification of the language first enacted by Congress in 1793, which remains in place today. Nor do they, or can they, point to any statement in legislative history declaring an intent to alter the meaning accorded to Section 101's language by authoritative judicial construction (which did not occur until *Chakrabarty*). Similarly, petitioners do not and cannot point to any statement of congressional intent that Section 101 neither should nor could be construed to encompass plant life, allowing the award of utility patents for plants that can meet all of the Title 35 requirements.

Petitioners quote excerpts from the legislative history of the two acts they rely on, the Plant Patent Act and the PVPA (Pet. Br. 38-43), in an effort haltingly to suggest a congressional intent to modify Section 101. A simple reading of the quoted statements, however, establishes that the most they show is some *belief* on the part of some congressional committees that utility patent protection was not available at the time of the statements. "But unenacted . . . beliefs . . . are not laws . . . ." *Puerto Rico Dep't of Consumer Affairs v. ISLA Petroleum Corp.*, 485 U.S. 495, 501 (1988). Petitioners can quote no statement of a congressional intent to approve or prescribe any assumed narrow view of pre-existing law or to reject utility patent protection for those plants which can meet all requirements for such protection. *See* Pet. App. 23 (district court opinion). To the contrary, the intent reflected in each of the two statutes relied on by petitioners is, if anything, virtually the opposite of a repudiation of utility patent protection for plants that can qualify for that protection.

That intent is particularly clear in the Plant Patent Act, which added protection for newly developed plants that have been asexually reproduced. *Chakrabarty* explains that, when Congress was informed that plants were "thought"—though never authoritatively held—to be unprotected under the existing patent laws (447 U.S. at 311), the congressional committees pointedly *rejected* the only cited reasons relating to the scope of patentable subject matter, *i.e.*, that plants were not inanimate matter and were thought "products of nature." *See* 447 U.S. at 312-13. The natural means Congress chose to enact that conclusion into law, *i.e.*, addition of new "plant" language to the existing statutory terms, did not remotely imply (contrary to what its committee reports said) that plants were *outside* existing patentable subject matter. After all, the existing terms already overlapped (*see* note 18, *supra*); and the alternative means of broadening terms' scope—writing statutory definitions—was not then used in the patent law (*see* Rev. Stat. §§ 4883-4936; 35 U.S.C. §§ 1-88 (1926 ed.)).[20] Congress reinforced its judgment about patentability, moreover, by removing the only other cited impediment to patent protection for plants—the perceived difficulty of meeting the standards for an adequate description (*Chakrabarty*, 447 U.S. at 311-12; 1930 Senate Report at 9-10; 1930 House Report at 10; 1930 House Hearing at 7)—specifically to try to put agriculture on a practical par with other industry. *See* 1930 Senate Report at 1; 1930 House Report at 1; Pet. Br. 38. The congressional judgment in 1930 thus suggests approval, not rejection, of plants' coverage by the language now in Section 101.

Nor can any intent to preclude utility patent protection for plants that typically propagate sexually be inferred from

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[20] The means Congress chose also cautiously preserved severability in the face of any remaining constitutional questions about protecting "discoveries," as suggested by the PTO Commissioner. 1930 House Hearing at 6.

Congress's exclusion (*see* note 8, *supra*) of sexual reproduction from the Plant Patent Act. For one thing, petitioners themselves recognize that an even more express "exclusion" from the later PVPA—which excludes "bacteria" (7 U.S.C. § 2402(a))—creates no such implication; to the contrary, petitioners affirmatively rely on the fact that bacteria are "specifically excluded from coverage within the PVPA" to explain *Chakrabarty*'s square holding that Section 101 covers, rather than excludes, a bacterium. Pet. Br. 31. In any event, the legislative history records the reason for not covering sexual reproduction within the 1930 Act, a reason independent of any congressional intent to curtail coverage under Section 101. The 1930 congressional committees stated that sexual reproduction could not reliably enough maintain a plant's identifying characteristics (while in some instances it might do so). 1930 Senate Report at 4 (recognizing "practical situation" that seed-based reproduction generally does not reproduce "true to the type," stating categorical limit to asexual reproduction "irrespective of the degree to which the seedlings come true to type" in particular instance); 1930 House Report at 4-5 (same). Congress added protection in 1970 after it determined that its practical premise was no longer sound. *See Chakrabarty*, 447 U.S. at 313.

The enactment of the PVPA in 1970 to embrace sexual reproduction, like the 1930 enactment of the Plant Patent Act, reflects no intent to preclude utility-patent protection for plants that come within Section 101's language and meet all the other requirements for protection. The PVPA itself says nothing to modify Section 101. Nor do the 1970 committee reports, which are less informative than the 1930 committee reports. *See* 1970 House Report; S. Rep. 91-1246 (1970); S. Rep. 91-1138 (1970). The reports contain no statement indicating an intent in the PVPA to enact a limitation on Section 101, or to prescribe or approve a narrow under-

standing; there is, to the contrary, a statement that the new law "does *not alter* protection currently available within the patent system." S. Rep. 91-1246 at 3 (emphasis added); Pet. Br. 41.

Petitioners' *amici* (though not petitioners, *see* Pet. Br. 38-39) argue that "Congress" "rejected" the application of Section 101 to plants (American Corn Growers Ass'n *Amicus* Brief at 8), but that argument is wrong. Even in the authorities on which petitioners principally rely, *FDA v. Brown & Williamson Tobacco Corp.*, 120 S. Ct. 1291 (2000), and *United States v. Estate of Romani*, 523 U.S. 517 (1998), the Court, reflecting the constitutional method of writing laws, strongly rejected reliance on Congress's failure to take action. *See id.* at 533-34; *id.* at 535-36 (Scalia, J., concurring in part and concurring in the judgment) (more sweeping and categorical rejection of argument); *Brown & Williamson*, 120 S. Ct. at 1312 ("We *do not rely* on Congress' failure to act—its consideration and rejection of bills that would have given the FDA this authority—in reaching this conclusion." (emphasis added)). And this case provides no basis for any exception, for there was no "congressional" "rejection" of the statutory construction at issue, namely, Section 101 coverage of plants.

What *amici* invoke is not an act of the Congress that enacted the language at issue or an act by any Congress at all; they do not even rely on an act of a congressional committee or, apparently, an affirmative act even of a congressional subcommittee. In addition, the subject of the supposed "rejection" was, in fact, not Section 101 coverage of plants at all. What *amici* rely on was a proposal to extend Sections 161 and 163 to sexually reproduced plants (*see* 1968 Senate Hearing at 639, 715; American Corn Growers Ass'n *Amicus* Brief at 7) and the failure of that proposal to emerge from a Senate subcommittee in 1968. All that occurred was that "[o]bjections were raised and no action was taken" on the

proposal in 1968, as petitioners observed in the court of appeals (C.A. Brief for Appellants at 7). Thus, the Senate Judiciary Committee (whose subcommittee had conducted the 1968 hearings) noted in reporting the PVPA in 1970 (S. Rep. No. 91-1246, at 3): "A number of objections to this proposal were advanced during the hearings, and no further action in that area [was] taken by the subcommittee."[21] In fact, the sole reason stated by the subcommittee chairman for the subcommittee's inaction was merely one of "feasability," not a repudiation of utility-patent protection where all the practical requirements of Title 35 can be met.[22] The 1968 events, in short, "provide no support for the hypothesis that both Houses of Congress silently endorsed [the] position" petitioners and their *amici* urge, *i.e.*, that utility patents under Section 101 should not be available. *Estate of Romani*, 523 U.S. at 534.

Even if the focus were to broaden from any particular Congress to the overall pattern of actions by "Congress" over time, petitioners could not establish an intent to curtail utility-patent protection for those plant inventions meeting all the statutory requirements. To the contrary, petitioners' position would turn on its head the course of congressional action. Protection was added in the 1930 Plant Patent Act, expanded

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[21] The subcommittee hearings in 1968 also report a proposal by a presidential commission—which apparently had "no representative from the plant or agricultural industry"—to delete the plant patent provisions. 1968 Senate Hearings at 648-49; *see* Pet. Br. 39. The same presidential commission also recommended deletion of the design-patent provisions (35 U.S.C. §§ 171-173) and foreclosure of patent protection for computer programs, whether claimed as articles, as processes performed by a machine, or as machine configurations. *"To Promote the Progress of . . . Useful Arts,"* Report of the President's Commission on the Patent System 12 (1966). None of those proposals has been adopted by Congress.

[22] "'A significant difference of opinion exists as to the feasibility of accomplishing this objective through the plant patent statute.'" Quoted in 1970 House Hearing at 10; 1970 Senate Hearing at 55-56.

in 1954, and expanded again in 1998. *See* pages 7-9, *supra*. Protection was added in the 1970 Plant Variety Protection Act, expanded in 1980, and expanded again in 1994 (the last time, as noted below, with the expressed recognition that utility patent protection was by then available). *See* pages 9-14, *supra*. With respect to commercial exploitation, Congress's intent and actions were consistently to add protection—even for plants not able to meet all the requirements for utility-patent protection.[23] That pattern reinforces the absence of any evident intent to reject utility-patent protection for the narrower class of plant inventions meeting the more demanding standards for such protection.

Even if there were some legislative-history statement of intent to limit Section 101's coverage, such a statement would not, standing alone, suffice to overcome the judicially declared clear meaning of Section 101. It is fundamental that "[w]ithout a text that can, in light of those statements, plausibly be interpreted as *prescribing*" the curtailment of Section 101's meaning, "it is impossible to find" such a curtailment. *Puerto Rico Dep't of Consumer Affairs v. ISLA Petroleum Corp.*, 485 U.S. at 501; *see Mackey v. Lanier Collection Agency*, 486 U.S. 825, 839-40 (1988) ("the opinion of this later Congress as to the meaning of a law enacted 10 years earlier does not control the issue"; "these views—absent an amendment to the original language of the section—do not direct our resolution" of the construction of the original language). Petitioners must, therefore, identify a later enactment that is actually inconsistent with Section 101 coverage to support a judicial curtailment of the reach of Section 101.

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[23] With respect to *noncommercial* exploitation, *see* 7 U.S.C. § 2541(e) and 5 D. Chisum, *Patents* § 16.03 (possible "experimental use" exception to patent infringement).

B. There Is No Inconsistency With Subsequent Enactments That Can Support Curtailment Of Section 101

Although petitioners rely on *Chakrabarty*'s statement that Congress "may choose to craft a statute specifically designed for such living things" (447 U.S. at 318, quoted at Pet. Br. 31), that statement does not suggest that *any* such statute would negate Section 101's application; the Court said nothing to repudiate the usual standards for determining when a later enactment has altered the effect of an earlier one. Accordingly, petitioners turn to those standards, focusing their argument on the need to establish an actual inconsistency between Section 101 coverage of plants and Congress's enactments covering certain classes of plants in the Plant Patent Act and the PVPA. Pet. Br. 13-28. But petitioners' argument invokes inapplicable authorities and in any event fails even under those authorities.

Petitioners' predominant reliance on *Estate of Romani* and *Brown & Williamson*, *see* Pet. Br. 13-17, fails for two basic reasons. First, this case, unlike those, involves an effort to use later congressional enactments to reject a meaning of an earlier statute that is (a) plain and (b) already judicially established—making this case one where petitioners must meet the very demanding standards of implied repeal, as the district court concluded. Pet. App. 30 (describing the argument as one of "implicit repeal" requiring showing of "irreconcilable conflict"). Second, and in any event, even under *Estate of Romani* and *Brown & Williamson*, let alone under the implied-repeal decisions, petitioners cannot succeed, for there simply is no inconsistency between the statutes at issue here.

1. In both *Estate of Romani* and *Brown & Williamson*, the Court adopted a narrow meaning of an earlier statute based on later congressional enactments. The Court did not follow the implied-repeal approach, since, in both cases, no

judicially established broader meaning of the earlier statute had to be curtailed (indeed, any such broader meaning, for reasons of language or history, was dubious). Even without applying the standards for implied repeals, moreover, the Court adopted the narrow meaning of the earlier statute only in the face of later enactments that, the Court stressed, were in actual and clear conflict with the asserted broad meaning of the earlier statute.

In *Estate of Romani*, the Court held that an unperfected United States tax lien was denied priority over perfected judgment liens against an estate by the Tax Lien Act of 1966, which declares that an unperfected federal tax lien "shall not be valid as against any . . . judgment lien creditor" (*see* 523 U.S. at 521 & n.3), notwithstanding the earlier-enacted federal priority statute, which states that "[a] claim of the United States Government shall be paid first" when a decedent's estate cannot satisfy all claims (*see id.* at 519 & n.1). The Court not only explained the strong reasons why coverage by the priority statute was itself dubious (*id.* at 525-29) but stressed that "the question whether it has any application to antecedent perfected liens has never been answered definitively." *Id.* at 529. It was precisely because "this basic question of interpretation remains unresolved," the Court concluded, that the question to be answered was not whether "the Tax Lien Act of 1966 has implicitly amended or repealed the priority statute." *Id.* at 530. With no need to find an implied repeal, control by the Tax Lien Act was determined by the flat conflict between its command and the never-before-adopted construction of the older federal priority statute the Government urged. The Court noted that "it is agreed that by the terms of [the Tax Lien Act], the Federal Government's liens are not valid as against the lien" held by the judgment creditor (*id.* at 524), and it repeatedly made clear (as is evident from the statutory language) that the case was one of actual conflict of a proposed reading of an

earlier statute and the express command of the later statutes. *Id.* at 532-33 (case involved "conflict" and "'plain inconsistency'"); *id.* at 534 (case would involve "conflicting statutory provisions" on United States's reading of priority statute).

In *FDA v. Brown & Williamson*, the Court likewise faced a question of first impression, deciding that the Food Drug and Cosmetics Act (the FDCA) does not apply to tobacco products. 120 S. Ct. at 1297. With no previous construction of the FDA statute having to be overcome, and with reason to question the FDCA's coverage of tobacco as an initial matter (*id.* at 1300 ("intended" issue), 1308 (doubts about intent of 1938 Congress)), the Court invoked *Estate of Romani* to examine the effect of the subsequent tobacco legislation on a proper construction of the FDCA. *Id.* at 1301. That effect was held determinative, because in the later enactments "Congress has clearly precluded" application of the FDCA to tobacco. *Id.* at 1297; *id.* at 1306 ("Congress intended to exclude tobacco products from the FDA's jurisdiction").

The Court rested that conclusion on its determination of a clear inconsistency between the later express congressional prescriptions, in statutory text, and the application of the FDCA to tobacco. The Court explained that the FDCA would require an outright ban on tobacco products if it applied (*id.* at 1301-03) and that, in any event, "[t]he regulation of product labeling . . . is an integral aspect of the FDCA" (*id.* at 1309). Yet Congress, in other enactments, had "foreclosed the removal of tobacco products from the market" (*id.* at 1303) by declaring it important to preserve the tobacco market as long as health risks were disclosed (*id.* at 1303-04); and Congress had also specifically precluded any agency regulation of cigarette labeling and any agency "policy-making authority on the subject of smoking and health" (*id.* at 1309). These later enactments were, in multiple ways, simply

"incompatible" with what the FDCA would require if it applied. *Id.* at 1309, 1313, 1314.[24]

As *Estate of Romani* indicates, the more demanding "implied repeal" standards apply when later statutes are invoked to alter a meaning that has already been judicially declared. "The rarity with which [the Court has] discovered implied repeals is due to the relatively stringent standard for such findings, namely, that there be an irreconcilable conflict between the two federal statutes at issue." *Matsushita Elec. Indus. Co., Ltd. v. Epstein*, 516 U.S. 367, 381 (1996) (internal quotations omitted) (citing *Kremer v. Chemical Constr. Corp.*, 456 U.S. 461, 468 (1982); *Radzanower v. Touche Ross & Co.*, 426 U.S. 148, 154 (1976)); *see Connecticut Nat. Bank v. Germain*, 503 U.S. 249, 253 (1992) (Court must respect both of overlapping statutes unless there is "'positive repugnancy'" between them) (quoting *Wood v. United States*, 16 Pet. (41 U.S.) 342, 363 (1842)); *Morton v. Mancari*, 417 U.S. 535, 551 (1974) ("when two statutes are capable of coexistence, it is the duty of the courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective"); *United States v. Borden Co.*, 308 U.S. 188, 198 (1939) ("[R]epeals by implication are not favored. When there are two acts upon the same subject, the rule is to give effect to both if possible.").

2. Petitioners are wrong in invoking *Estate of Romani* and *Brown & Williamson* to escape the implied-repeal standards. Petitioners are relying on later statutes to override a "plain meaning" of a statute that has already been judicially

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[24] In *United States v. Fausto*, 484 U.S. 439 (1988), the initial statute at issue, the Back Pay Act, actually made express reference to other laws, referring to certain determinations (about whether a Government personnel action was proper) by an "appropriate authority under applicable law." *See id.* at 454. The Court simply held that, when the other relevant laws changed, the "appropriate authority" for making the determination, by the very terms of the Back Pay Act, also changed. *Id.*

declared. *Chakrabarty*, 447 U.S. at 314. In this case, therefore, petitioners have to meet the high standards of the rule against implied repeal, requiring respect for both statutes unless there is an irreconcilable conflict. But there is no such irreconcilable conflict in this case.

That is so, indeed, for the same reason that there is not even a statutory inconsistency such as, in both *Estate of Romani* and *Brown & Williamson*, was critical to establishing that a later Congress had "precluded" a particular application of an earlier statute, as petitioners mistakenly say Congress has done here. Pet. Br. 13. In both the Plant Patent Act and the PVPA, Congress afforded certain defined protections for classes of plants that did not have to meet all the qualifications for utility patent protection. In particular, neither the Plant Patent Act nor the PVPA requires the inventor to make the full disclosure required by 35 U.S.C. § 112, now typically requiring a deposit of biological materals, with full public access to the deposit. And the PVPA does not require the showing of nonobviousness required for a utility patent, a showing made by the kind of extensive recitations that appear in Pioneer's patents (JA 29-50).[25] Those simple facts explain why petitioners' enumeration of various limitations on the protection afforded under the PVPA (Pet. Br. 22-24) cannot establish any inconsistency with utility-patent protection. Affording somewhat more limited protections to a wider class of subject matter, including plants whose inventors either could not meet or choose not to meet the full requirements for utility-patent protections, is consistent with affording stronger

[25] We note that, for both of the Pioneer patents that appear in the joint appendix, the file histories (which are not in the record of this case, but are public documents available from the PTO) show multiple rejections under both Section 103 (obviousness) and Section 112 (description). *See Ex Parte C*, 27 USPQ2d 1492, 1496 (Bd. Pat. App. & Interf. 1993) (rejecting application for utility patent on plant as obvious).

protections to the narrower class of subject matter that can meet the higher standards for obtaining a valid utility patent, precisely as the district court explained (Pet. App. 32-33).[26]

3. Not able to demonstrate actual inconsistency, petitioners resort to a suggestion (Pet. Br. 44-48) that mere overlap of the statutory enactments is enough to limit Section 101's plain meaning. The law is to the contrary. As the Court summarized it in *Borden*, 308 U.S. at 198: "It is not sufficient . . . 'to establish that subsequent laws cover some or even all of the cases provided for by [the prior act]; for they may be merely affirmative, or cumulative, or auxiliary.' ") (quoting *Wood*, 16 Pet. (41 U.S.) at 363). More recently, in *Mackey v. Lanier Collection Agency*, 486 U.S. at 839 n.14, the Court stressed the important difference between analyzing the effect of a later enacted statute on an earlier one and analyzing the effect of two simultaneously enacted provisions, explaining that overlap had significance only in the latter situation: "It is this sort of redundancy—i.e., the suggestion that Congress intentionally adopted, at a single time, two separate provisions having the same meaning—that calls a particular statutory interpretation into question." Overlap in laws enacted by different Congresses is no reason, in the absence of inconsistency, to decline to give effect to each statute, particularly where one has a judicially declared plain meaning; "[r]edundancies across statutes are not unusual events in drafting." *Connecticut Nat. Bank v.*

[26] Nothing about the administrative structure of the PVPA is inconsistent with PTO issuance of patents. Two Executive Branch departments have been assigned related but different responsibilities for judging certain applications. Expertise can and does reside in each department. Nor does Congress's creation of the PVP Board (7 U.S.C. § 2327), which serves merely in an advisory function (*id.* § 2327(b)), imply anything to negate the appropriateness of PTO examination and issuance of patent applications on plants.

Germain, 503 U.S. at 253; *see Merrill v. Fahs*, 324 U.S. 308, 312 (1945) ("explicitness was one of cautious redundancy").

In the present context it is particularly improper to infer from overlap of subject matter a congressional intent to achieve mutual exclusivity. The very statutes at issue preclude any inference that Congress intended to repudiate statutory overlap: as explained above, it is plain on the face of the PVPA, in 7 U.S.C. § 2541(a)(9), that Congress contemplated that the very same subject matter could be protected under either the PVPA or the Plant Patent Act. *See* pages 12-13, *supra*. More generally in the area of intellectual property rights, there is no general congressional antipathy to overlapping federal statutory protection.[27] It is well established, for example, that the very same ornamental design may be subject to protection against unauthorized use under a design patent (35 U.S.C. §§ 171-173), by copyright (17 U.S.C. §§ 101, 102(a)), and as a trademark (15 U.S.C. §§ 1052, 1125, 1127). *See Mazer v. Stein*, 347 U.S. 201, 217-18 (1954) (design patent and copyright); *In re Mogen David Wine Corp.*, 328 F.2d 925 (CCPA 1964); *MPEP* § 1512 ("an area of overlap between copyright and design patent statutes where the author/inventor can secure both a copyright and a design patent"; "[a] design patent and a trademark may be obtained on the same subject matter"); 1 D. Chisum, *Patents* § 1.04[5], [6].

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[27] In other areas, too, overlapping protections in federal statutory law are common. An employee may be protected against race discrimination by, for example, Titles VI and VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000d *et seq.* and § 2000e *et seq.*, as well as 42 U.S.C. § 1981 and § 1983. An employee may be protected against sex discrimination by, for example, Titles VII of the Civil Rights Act of 1964, 42 U.S.C. § 2000e *et seq.*, and Title IX of the Education Amendments of 1972, 20 U.S.C. § 1681 *et seq.*, as well as the Equal Pay Act, 29 U.S.C. § 206. A user of public accommodations may be protected against disability discrimination by, for example, the Rehabilitation Act of 1974, 29 U.S.C. § 794, and by the Americans with Disabilities Act, 42 U.S.C. § 12101 *et seq.*

Contrary to petitioners' contention (Pet. Br. 46-47), no rule against overlapping protection was established or suggested by this Court's recent decision in *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 121 S. Ct. 1255 (2001). The Court there relied on a tension between the elements of two specific forms of protection, holding that the plaintiff's utility patent on a useful article created a strong presumption against satisfaction of the element of non-functionality required for trade-dress protection. That result does not speak to a situation, like the present, where satisfying the requirements for one form of protection does not even begin to imply inability to satisfy the requirements of another form of protection.

III. CONGRESS HAS RECOGNIZED AND RATIFIED THE AVAILABILITY OF UTILITY PATENT PROTECTION FOR PLANTS AND SEEDS ALSO COVERED BY THE PVPA

After the PTO's 1985 decision in *In re Hibberd*, the industry began relying on utility-patent protection. Within a few years, committees within Congress were informed of the general availability of utility patents on plants. In 1989, the Office of Technology Assessment submitted a report, requested by a congressional committee, entitled *New Developments in Biotechnology: Patenting Life*. Chapter 5 of the report, "Intellectual Property and Plants," extensively laid out the history and scope of coverage of plants by plant patents, utility patents, and PVPA certificates. *Id.* at 67-90.

Several years later, when the 103rd Congress considered and enacted its comprehensive amendments to the PVPA, the availability of utility patent protection was repeatedly recognized—without indication of any perception of inconsistency between utility patent coverage and PVPA coverage. Senator Kerrey, in introducing the amendments (139 Cong. Rec. S10867 (1993)), expressly recognized that

"utility patents," along with "plant patents" and "plant variety protection," were now available for plants. *Id.*; *see id.* at S10868 ("utility patents"). The same recognition was expressed by Senator Kerrey and others in the Senate hearings on the amendments. (*See Plant Variety Protection Act Amendments of 1993*, Hearing before the Subcomm. on Agriculture Research, Conservation, Forestry, and General Legislation of the Senate Comm. on Agriculture, Nutrition, and Forestry, 103d Cong. 1st Sess.2 (1993) ["1993 Senate Hearing"] ("utility patents"), 30 ("utility patents"), 31 ("utility patents"); *id.* at 33 ("utility patents"), 36 ("utility patents"))[28] and in the House hearings the next spring (*see Plant Variety Protection Act Amendments of 1993*, Hearing before the Subcomm. on Department Operations and Nutrition of the House Comm. on Agriculture, 103d Cong., 2d Sess.96 (1194) [1994 House Hearing"] ("utility patents"); *id.* at 97 ("utility patents"), 99 ("utility patents"), 102 ("utility patents")). *See also* 1993 Senate Hearing at 7 (statement from Department of Agriculture: "*one* effective form of protection for new plant varieties that are reproduced by seed is the [PVPA]") (emphasis added); 1994 House Hearing at 26, 63 (same).

Neither the Senate sponsor nor others expressed a view that the PVPA was somehow inconsistent with the availability of utility patent protection, though the reach of the protections differed. To the contrary, Senator Kerrey expressed the simple reasons why there was no inconsistency. He noted, in particular, that utility patents were available for a narrower class of plants than PVPA certificates, stating that "[t]he legal standards for protection are less stringent" under the PVPA and explaining:

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[28] The Committee also put questions to the Department of Agriculture based on the 1989 report of the Office of Technology Assessment, *Patenting Life*, which described the availability of utility patents for plants since 1985. *See* 1993 Senate Hearing at 89, 98.

> Eligibility for protection under the current PVPA requires that varieties be novel, distinct, uniform, and stable. The unobvious requirement of patent law, considered a more difficult hurdle, is supplanted by PVPA by distinctiveness—a requirement that the variety may be unique in one or more identifiable morphological, physiological, or other characteristics. Therefore, an obvious, but distinct, new variety, may be more easily protected under PVPA.

139 Cong. Rec. S10868 (1993) (Sen. Kerrey); *see* 1993 Senate Hearing at 3 (Sen. Kerrey). In short, there is no inconsistency between utility patent protection for the narrower class of plants qualifying for it (and for which the greater effort required to obtain utility patents is worthwhile) and the somewhat narrower protection for the broader class of plants qualifying (more easily) under the PVPA. *See also Patenting Life* at 76-77 (utility patents offer broader protection but are perceived as harder to obtain; utility patents, unlike PVPA certificates, also often require a deposit that is then publicly accessible).

The recognition of the availability of utility patent protection was written into the Patent Act in 1999. This Court has made clear that a legal understanding that recognizes the availability of certain rights can be ratified by a positive congressional enactment that extends an aspect of such rights. *See Alexander v. Sandoval*, 121 S. Ct. 1511, 1516 (2001); *Franklin v. Gwinnett County Public Schools*, 503 U.S. 60, 72 (1992); *id.* at 78 (Scalia, J., concurring in the judgment). Congress's 1999 amendment of 35 U.S.C. § 119 is precisely such an enactment.

For purposes of applying the various rules governing priority of invention, the filing date of a patent application is generally a critical date. *See* 35 U.S.C. § 102. Section 119 addresses the determination of the priority date when applicants for United States patents also have filed patent

applications for the same invention in foreign countries, providing for certain coordination during a one-year period. Specifically, Section 119 provides that, with certain exceptions, a United States patent application is treated as if it had been filed on the date of an application filed for the same invention (with adequate disclosure) within the previous twelve months in a foreign country affording reciprocal treatment of United States applications. *See* 35 U.S.C. § 119(a).

In 1999, Congress amended Section 119 by adding subsection (f), along with definitions in subsection (g). Pub. L. No. 106-113, Div. B, § 1000(a)(9), 113 Stat. 1536 (Nov. 29, 1999), enacting S. 1948, attached as Appendix I, § 4802, 113 Stat. 1501A-589. The new subsection (f) was added to include within the priority-date relief of Section 119 not only foreign applications for "patents" but also applications "for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party)." 35 U.S.C. § 119(f). That provision ratifies the availability of patent rights for plants covered by such "plant breeder's rights"—the term used under the UPOV Convention to describe the patent-like rights in plants (no matter which method of reproduction is typically used). The relevant conference report expressly states that this extension of patent rights covers not only "plant patent" protection but also "utility patent protection":

> Section 4802 also adds subsection (f) to section 119 of the Patent Act to provide for the right of priority in the United States on the basis of an application for a plant breeder's right first filed in a WTO member country or in a UPOV Contracting Party. Many foreign countries provide only a sui generis system of protection for plant varieties. Because section 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right *when seeking plant patent or utility patent protection for a plant variety* in this country.

H.R. Conf. Rep. 106-464, at 328 (1999) (emphasis added) (footnote omitted); *see also* 145 Cong. Rec. S14696-03, S14723 (1999) (identical quotation from explanatory statement introducing S. 1948).

Petitioners, in discussing Section 119, do not deny that new Section 119(f) applies to utility patents on plants, including sexually reproduced plants. Instead, they say only that the enactment somehow cannot be given weight because it was "[a]n isolated amendment tacked on the end of a lengthy, multi-subject revenue bill." Pet. Br. 26; *id.* at 26-27. Even aside from the absence of cited authority establishing that parts of appropriations bills may be ignored, petitioners' characterization of the amendment at issue here is simply wrong.

The statute at issue, Pub. L. No. 106-113, enacted an appropriations bill, H.R. 3194, as set forth in H.R. Conf. Rep. 106-479 (1999), but Division B of that bill simply attached (among other things) what had been S.1948. *Id.* at 79. That bill, in turn, was identical to, and introduced simply to provide a vehicle for quick Senate adoption of, the conference bill, H.R. 1554, which had already passed the House as a separate substantive law. 145 Cong. Rec. H11826 (1999) (House approval of H.R. 1554 conference bill). *Compare* H.R. Conf. Rep. 106-464, at 181-82 (section 4802 of H.R. 1554) *with* H.R. Conf. Rep. 106-479, at 2408-09, and 145 Cong. Rec. H12230-02, H12605 (1999) (section 4802 of S. 1948). The explanatory statement accompanying S. 1948 (145 Cong. Rec. S14696-03, S14723 (1999)) is thus identical to the conference report on H.R. 1554 (H.R. Conf. Rep. 106-464, at 328). The appropriations bill was, accordingly, a procedural vehicle for enactment of a separately considered substantive bill.

Indeed, these bills in late 1999 were anything but novel in their proposal to add Section 119 protection based on breeder's right certificates for applicants for United States "utility patents." Prior congressional committees considering the same amendments to Section 119 had given the same explanations. *E.g.*, H.R. Rep. 106-287, Pt. 1, at 185 (1999) (proposing same amendment to section 119, explaining: "Because § 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility protection for a plant variety in this country."); S. Rep. 105-42, at 284-85 (1997) (proposing same amendment to Section 119, explaining: "Because section 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility protection for a plant variety in this country."); H.R. Rep. 105-39, at 218-19 (1997) (proposing same amendment to Section 119, explaining: "Because section 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility protection for a plant variety in this country."); H.R. Rep. 104-784, at 219-20 (1996) (proposing same amendment to Section 119, explaining: "Because section 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility protection for a plant variety in this country."). In brief, Congress has now passed a law approving the availability of utility patents for plants, thus affirming—rather than negating—the application to plants of the plain and judicially confirmed meaning of Section 101.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

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BRIEF FOR THE UNITED STATES AS AMICUS CURIAE SUPPORTING RESPONDENT

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QUESTION PRESENTED

Whether sexually reproduced plants are patentable subject matter under 35 U.S.C. 101.

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In the Supreme Court of the United States

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ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE UNITED STATES AS AMICUS CURIAE SUPPORTING RESPONDENT

INTEREST OF THE UNITED STATES

This case presents the question whether plants that are modified by man and reproduced from seed (specifically, man-modified corn seed plants) are patentable under 35 U.S.C. 101. The United States has a substantial interest in the resolution of that question because Congress, pursuant to the Patent Clause of the Constitution, U.S. Const. Art. I, § 8, Cl. 8, has charged the United States Patent and Trademark Office (PTO), an agency of the Department of Commerce, with responsibility for examining all patent applications to ensure that they satisfy the statutory conditions for patentability. See 35 U.S.C. 131 (1994 & Supp. V 1999). For more than 15 years, the PTO has issued patents under 35 U.S.C. 101 for plants that are reproduced from seed and otherwise qualify for protection. The United States also has

an interest in preserving the balance that Congress has struck among the competing policy interests that underlie the patent system. Those interests include establishing and preserving incentives for innovation, disseminating useful knowledge, and preserving competition.

At this Court's invitation, the United States filed a brief as amicus curiae in this case at the petition stage.

STATEMENT

1. Three different statutory schemes are relevant to this case.

Utility Patents. Section 101 of Title 35, which has its origins in the Patent Act of 1790, ch. 7, 1 Stat. 109, provides that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35]." 35 U.S.C. 101. Patents issued under Section 101 are known as "utility patents," because of the requirement that a patentable invention be "useful." See generally *TrafFix Devices, Inc.* v. *Marketing Displays, Inc.*, 121 S. Ct. 1255, 1260-1263 (2001); see also *Brenner* v. *Manson*, 383 U.S. 519, 528-536 (1966). Holders of utility patents have the right to exclude others from making, using, or selling their patented invention in the United States during the 20-year term of the patent. 35 U.S.C. 154(a). Utility patents are distinct from "design patents," which are issued under 35 U.S.C. 171 for "new, original and ornamental design[s]" for articles of manufacture.

The Plant Patent Act. The Plant Patent Act of 1930 (PPA), ch. 312, 46 Stat. 376 (35 U.S.C. 161-164 (1994 & Supp. V 1999)), authorizes the PTO to grant "plant patents" covering new and distinct varieties of asexually reproduced plants. Asexual (or vegetative) reproduction of plants involves regeneration of vegetative tissues or organs into self-

supporting plants with properties similar to those of the source plant. Asexually reproduced plants are reproduced from a single parent, through processes such as grafting, budding, cutting, rooting, and layering.[1] Asexual reproduction may occur naturally, or as part of human plant-breeding. Either way, an asexually reproduced plant is genetically identical to its parent. See 8 T. Everett, *The New York Botanical Garden Illustrated Encyclopedia of Horticulture* 2801 (1981) ("Plants resulting from vegetative propagation are essent[i]ally extensions of the old ones, having a separate physical existence, but identical genetically."). Accordingly, a plant that is reproduced asexually will be capable of reproducing sexually through seed if, but only if, its parent was capable of such reproduction.[2]

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[1] A cutting, for instance, is propagated by growing roots out of a stem or other vegetative part detached from the parent plant. See 4 *The New Royal Horticultural Society Dictionary of Gardening* 615 (A. Huxley, et al. eds., 1992). Vegetative propagation is used primarily for reproducing plants, such as most fruit, nut, and woody crop species, that do not produce from seeds with consistent genetic characteristics. See C. Chong, "Plant Propagation," *reprinted in* 1 *CRC Handbook of Plant Science in Agriculture* 91 (B. Christie & A. Hansen eds., 1987). Asexual propagation also can allow more rapid production of plants because it eliminates problems associated with seed dormancy and germination. *Id.* at 92.

[2] For example, most commercially grown avocados come from plants that are reproduced asexually through grafting. But the avocado seed, even from a grafted parent, is capable of producing a new cultivar. See College of Tropical Agric. & Human Res., Univ. of Haw., *What Makes a Good Avocado Cultivar Good* 1 (Mar. 1999) (available at <http://www2.ctahr.hawaii.edu/oc/freepubs/pdf/F_N-1.pdf>). Peppermint also is reproduced asexually (through cuttings from the root system of the source plant), but peppermint does not produce seeds and it is incapable of sexual reproduction. See The Ohio State Univ., *2001 Ohio Vegetable Production Guide (Bulletin 672-01)* 3 (available at <http//www.ag.ohio-state.edu/~ohioline/b672/b672_20.html>.

Section 161 of Title 35 provides:

> Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. 161. Section 161 further provides that, as a general rule, "[t]he provisions of [Title 35] relating to patents for inventions shall apply to patents for plants." 35 U.S.C. 161. Section 162, however, eases the "written description" and "distinct[] claim[]" requirements that apply to utility patents under 35 U.S.C. 112. In the case of an asexually reproduced plant, the applicant's written description of the invention need only be "as complete as is reasonably possible," and the subject matter that is claimed as the invention may be described "in formal terms," by reference "to the plant shown and described." 35 U.S.C. 162.

The PTO has granted more than 10,000 plant patents under Section 161.

The Plant Variety Protection Act. The Plant Variety Protection Act (PVPA), Pub. L. No. 91-577, Tit. II, § 42(a), 84 Stat. 1547, enacted in 1970, provides protection to novel varieties of sexually reproduced plants. In sexually reproduced plants, the fertilization process introduces genetic variation into the plant line.[3] To receive protection under

[3] In sexual reproduction, the genes controlling plant characteristics are distributed in pollen (the male genes) and in ovules (the female genes). Pollen grains enter the base of the developing ovule, the genetic material combines, and the plant embryo forms inside the seed husk. See 3 *The New Royal Horticultural Society Dictionary of Gardening* 642-643 (A. Huxley, et al. eds., 1992). After the seed has fully developed, it will, under the appropriate conditions, germinate and develop into another plant that

the PVPA, therefore, a new plant variety that is reproduced from seed must be clearly distinct from other known varieties; uniform, such that variations in the sexually reproduced plants are describable, predictable, and commercially acceptable; and stable, so that the essential and distinctive characteristics of the variety are present in sexually reproduced offspring. See 7 U.S.C. 2402(a) (1994 & Supp. V 1999).

The Department of Agriculture issues plant variety certificates under the PVPA to breeders of novel varieties of sexually reproduced plants. See 7 U.S.C. 2483 (1994 & Supp. V 1999) ("Contents and term[s] of plant variety protection"). Plant variety certificates entitle the holder to the equivalent of a property interest in the plant variety, for a term of 20 or 25 years. 7 U.S.C. 2532, 2541.

2. This Court has addressed the relationship between utility patenting under Section 101, and protection under the PPA and the PVPA. In *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980), this Court held that a genetically engineered bacterium capable of breaking down crude oil, even though a living thing, was patentable subject matter under the plain language of Section 101. *Id.* at 305, 308-310. In so holding, the Court rejected the argument (made by the government in that case) that Congress's adoption of the PPA and PVPA was evidence of the exclusion of living things from the scope of patentable subject matter under Section 101. *Id.* at 310-314.[4]

expresses the genetic characteristics of the combination of its parents' genes. Seed propagation is usually the cheapest method of plant reproduction. It is used for cereal grains and many other popular crops. C. Chong, "Plant Propagation," *reprinted in* 1 *CRC Handbook of Plant Science in Agriculture* 91 (B. Christie & A. Hanson eds., 1987).

[4] Well before *Chakrabarty*, the PTO had held that bacteria are not "plants" for purposes of obtaining patent protection under the PPA. See *In re Arzberger*, 112 F.2d 834, 835-836 (C.C.P.A. 1940). Likewise, the

Five years after *Chakrabarty*, and in reliance on that decision, the PTO's Board of Appeals and Interferences held that 35 U.S.C. 101 authorizes utility patent protection for sexually reproduced plants (specifically, corn varieties). *Ex parte Hibberd*, 227 U.S.P.Q. (BNA) 443 (1985). The Board deemed it established by *Chakrabarty* "that Section 101 includes man-made life forms, including plant life." *Id.* at 444. The Board further rejected the argument that Congress implicitly carved-out from the scope of Section 101 the subject matter covered by the PPA and PVPA. Again deeming this Court's analysis in *Chakrabarty* to be dispositive, the Board explained that neither the PPA nor the PVPA restricts or limits the scope of patentable subject matter under Section 101. *Id.* at 445. Nor, the Board held, did protecting plants under Section 101 create irreconcilable practical conflicts with the PPA or PVPA. *Id.* at 446-447.[5]

During the 16 years since *Hibberd*, the PTO has issued hundreds of utility patents protecting sexually reproduced plants under Section 101. As of April 2001, approximately 1800 utility patents included claims to plants, seeds, plant parts, or plant tissues. Approximately 1300 of those utility patents had an explicit claim to a plant seed.

3. Respondent in this case holds utility patents granted under Section 101 for sexually reproduced corn hybrids. Respondent filed suit against petitioners, alleging that they infringed utility patents covering 17 corn seed products by making, using, and selling or offering for sale seed corn of

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Department of Agriculture does not issue plant variety certificates for bacteria. See 7 U.S.C. 2401(a)(9) (defining "variety").

[5] In 1987, the PTO published a Notice in its *Official Gazette* stating that it "considers nonnaturally occurring non-human multicellular living organisms * * * to be patentable subject matter within the scope of 35 U.S.C. 101." 1077 Off. Gaz. Pat. Office 24 (Apr. 21, 1987).

respondent's patented varieties. Petitioners are not authorized sales representatives of respondent. Pet. App. 14-15.

Petitioners asserted, among other defenses, the defense of patent invalidity. Petitioners also asserted a counterclaim seeking a declaratory judgment that all of the utility patents relied upon in respondent's complaint are invalid. Pet. App. 15-16. Petitioners moved for summary judgment on their counterclaim, arguing that patents directed to sexually reproduced plants are not patentable under Section 101, because Congress intended the PVPA to be the exclusive means of securing protection for sexually reproduced plants. *Id.* at 16.

The district court denied petitioners' motion for summary judgment and held that Section 101 authorizes the issuance of patents covering sexually reproduced plants. Pet. App. 13-39. Relying upon *Chakrabarty* as well as the plain language and legislative histories of Section 101, the PPA, and the PVPA, the district court concluded that the text of Section 101 authorizes the grant of patents covering plants, *id.* at 22, and that Congress's intention in adopting the PPA and PVPA was not to limit Section 101, but rather "to extend patent protection to an area [historically] not often able to meet the requirements" for protection under Section 101, *id.* at 29.

Although the district court recognized that the protection afforded by the PVPA differs somewhat from the protection available under Section 101, it held that there is no irreconcilable conflict between the two forms of protection. Pet. App. 30-34. The district court observed that if Congress perceived any inconsistency between utility patent protection and the PVPA, it could have intervened at any time after the PTO began issuing utility patents for plants in 1985. *Id.* at 36.

4. The court of appeals affirmed. Starting from the premise that "Congress plainly contemplated that [Section 101]

would be given wide scope," Pet. App. 4 (quoting *Chakrabarty*, 447 U.S. at 308), the court of appeals found nothing in Section 101, the PPA, or the PVPA that narrows that broad scope by excluding plants from eligibility for protection, *id.* at 6-8. Nor did the court of appeals find any conflict between utility patent protection for sexually reproduced plants and certification of such plants under the PVPA. The court determined "that the asserted conflict [between the statutes] is simply the difference in the rights and obligations imposed," not any difficulty in applying the two statutes simultaneously. *Id.* at 9.

SUMMARY OF ARGUMENT

1. In *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980), this Court held that patentable subject matter under 35 U.S.C. 101 "include[s] anything under the sun that is made by man." 447 U.S. at 309. The *Chakrabarty* Court rejected the argument that the PPA and the PVPA demonstrate a congressional understanding that living things are not protectable under Section 101. Specifically addressing protection of sexually reproduced plants, the Court held that "[t]here is nothing in [the PVPA's] language or history to suggest that" the law was enacted because Section 101 precluded patenting of living things. *Id.* at 313.

Petitioners urge the Court to overrule *Chakrabarty*'s construction of Section 101 and to revisit *Chakrabarty*'s reasoning concerning the relationship between Section 101 and the PVPA. Those aspects of *Chakrabarty*, however, are quintessentially deserving of repose. *Chakrabarty* involved statutory rather than constitutional construction, and Congress could have overridden this Court's interpretation of Section 101 if it disagreed. In the two decades since *Chakrabarty*, plant breeders and genetic engineers have invested time and resources in reliance upon the availability of patent protection, and such protection has proved

workable in practice. Finally, petitioners' arguments for overruling *Chakrabarty* are not materially different from the arguments the Court rejected 21 years ago.

2. Congress has acquiesced, both implicitly and explicitly, in the patenting of sexually reproduced plants. Congress has not overruled *Chakrabarty*, even though legislators have acknowledged the PTO's practice of granting utility patents for sexually reproduced plants. In 1999, moreover, Congress added a new provision to Title 35 (35 U.S.C. 119(f) (Supp. V 1999)), which assumes the patentability of plants under Section 101.

3. Petitioners are incorrect in arguing that specific provisions of the PVPA are irreconcilable with utility patent protection for sexually reproduced plants. All of the expert bodies that have considered the relationship between the PVPA and Section 101—including the Senate Judiciary Committee, the PTO, the Department of Agriculture's Plant Variety Protection Office, and the United States Court of Appeals for the Federal Circuit—agree that both statutes can be applied to sexually reproduced plants without any necessary conflict between them. The PVPA and Section 101 simply provide *different* protection for such plants. In particular, the PVPA's authorization of non-infringing uses that would not be permissible uses of a patented plant (see, *e.g.*, 7 U.S.C. 2543, 2544), does not show that patenting sexually reproduced plants defeats the purposes of the PVPA. The PVPA's defenses expressly apply only to infringement actions brought under the PVPA, not to actions under Section 101 or other competition-related statutes. Furthermore, the lesser degree of protection afforded to holders of plant variety certificates matches the lesser contribution to public knowledge that an inventor makes when applying for a plant certificate, as compared to a utility patent. As a general matter, moreover, there is no prohibition on protect-

ing qualifying inventions under more than one statutory scheme.

Petitioners' objections to protecting new plant technologies under Section 101 ultimately reduce to the argument that Section 101 affords plant developers too much protection against those who wish to use the developers' new technologies without paying for a license. That objection is for the legislature, not the courts, to address. Intellectual property protection rests upon the assumption that rewarding inventors benefits the public as well. That logic is as valid in the field of agriculture as it is in other areas of endeavor. If petitioners can show that Section 101 overrewards plant developers for their novel and useful discoveries, then petitioners should take their evidence to Congress.

ARGUMENT

I. *STARE DECISIS* PRINCIPLES FORECLOSE PETITIONERS' ARGUMENTS BASED UPON THE TEXT OF SECTION 101 AND THE LEGISLATIVE HISTORIES OF THE PPA AND THE PVPA

Petitioners contend (Br. 19-21, 27-43) that passage of the PPA and the PVPA confirmed a longstanding understanding that plants are outside the scope of patentable subject matter under Section 101. In particular, petitioners assert that "[t]he PVPA was enacted [in 1970] because sexually reproducing plant varieties and their seeds were not and had never been intended by Congress to be included within the classes of things patentable under Title 35." Br. 42-43.

This Court rejected that very argument in *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980). Initially, the *Chakrabarty* Court held that Congress's grant of patent authority in Section 101 is broad on its face. *Id.* at 308-310. Although "a new plant found in the wild is not patentable subject matter," *id.* at 309, the Court explained that the subject

matter potentially patentable under Section 101 "include[s] anything under the sun that is made by man," *ibid.* (quoting S. Rep. No. 1979, 82d Cong., 2d Sess. 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. 6 (1952)); accord *Diamond* v. *Diehr*, 450 U.S. 175, 182 (1981). Specifically, living things modified by man are within the scope of Section 101 because they qualify as either a "manufacture" or a "composition of matter" under the ordinary dictionary definitions of those terms. 447 U.S. at 308.

The *Chakrabarty* Court then rejected the argument that Congress's enactment of the PPA and the PVPA reflected an understanding that plants could never be patented under Section 101. 447 U.S. at 310-314. The Court explained that plants historically were thought ineligible for utility patent protection, not as a matter of law, but as a matter of practice, because (1) plants were products of nature rather than of man and (2) they could not be described with sufficient precision to satisfy the "written description" requirement of the general patent law, see 35 U.S.C. 112. 447 U.S. at 311-312. Congress dispelled the former concern and specifically addressed the latter when, in 1930, it drafted the PPA's special provisions for patenting asexually reproduced plants. *Id.* at 312-313. The Court noted in *Chakrabarty* that when Congress enacted the PPA, "[n]o Committee or Member of Congress * * * expressed the broader view, now urged by the petitioner, that the terms 'manufacture' or 'composition of matter' exclude living things." *Id.* at 312.

The Court further held that passage of the PVPA in 1970 did not suggest that utility patents are unavailable for living things. Sexually reproduced plants, the Court determined, were not made patentable under the PPA because it was not possible in 1930 to produce plants with consistent genetic qualities through seed. 447 U.S. at 313. When sexual reproduction of uniform and stable plant varieties became possible, Congress enacted the PVPA as an analog to the PPA.

See *id.* at 311-312, 313; 7 U.S.C. 2402(a) (1994 & Supp. V 1999). "There is nothing in [the PVPA's] language or history," the Court concluded, "to suggest that it was enacted because § 101 did not include living things." 447 U.S. at 313.

The four dissenting Justices in *Chakrabarty* particularly disagreed with the Court's analysis of the PPA and the PVPA. 447 U.S. at 319-321 (Brennan, J., dissenting). The dissenting Justices viewed the PPA and PVPA as "dispositive" (*id.* at 319 n.2), because if plants were within the scope of Section 101, they "could have been patented without new legislation" (*id.* at 320). Those Justices read the legislative history of the PPA and PVPA as indicating that Congress intended to realize "benefits * * * from extending patent protection to plants" that were "previously unavailable" because plants were outside the scope of patentable subject matter under Section 101. *Ibid.*

Petitioners challenge (Br. 28-31) *Chakrabarty*'s holding (reaffirmed in *Diamond* v. *Diehr*, 450 U.S. at 182) that patentable subject matter under Section 101 "include[s] anything under the sun that is made by man." 447 U.S. at 309. According to petitioners, this Court's interpretation of Section 101 rests on "a snippet of a sentence from the legislative history" (Br. 30-31) that is taken out of context. Repeating another argument made and rejected in *Chakrabarty*, petitioners also maintain (Br. 19) that "there would have been no reason for Congress to have passed the 1930 PPA" if plants were already patentable under Section 101.[6] Relatedly, petitioners suggest (Br. 33-37) that, under *FDA* v. *Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000), the mere fact that Congress established a special regime to protect sexually reproduced plants is sufficient grounds to deem utility patent protection unavailable. That argument is just a variation of the argument, rejected in *Chakrabarty*, that Congress's enactment of plant-specific laws showed that Congress deemed such laws necessary to fill gaps in the Patent Act. See 447 U.S. at 311; see also note 10, *infra*.

[6] The government argued as petitioner in *Chakrabarty* that enactment of the PVPA in 1970 "enlarged the class of protectable living things by authorizing patent-type protection for new types of sexually reproduced plants," and that the PVPA "would be redundant" if Congress had thought that sexually reproduced plants already were protectable under Section 101. See Brief for the Petitioner (*Chakrabarty* Pet. Br.), No. 79-136, at 22. The government cited extensive legislative history in support of the view that Section 101, the PPA, and the PVPA all provide non-overlapping protection—the very same legislative history on which petitioners now rely. Compare *id.* at 24 (quoting Senate Report on PPA) with Pet. Br. 38 (quoting same passage); and compare *Chakrabarty* Pet. Br. 28 (quoting House Report on PVPA and citing Senate Report) with Pet. Br. 40 (quoting same passages of House and Senate Reports).

This Court should not revisit the holdings of *Chakrabarty*. Indeed, traditional principles of *stare decisis* weigh powerfully against the reconsideration of *Chakrabarty* that petitioners urge.

First, *stare decisis* has "special force" where, as here, a statutory construction is involved. *Patterson* v. *McLean Credit Union*, 491 U.S. 164, 172 (1989). When only the interpretation of a congressional enactment is at issue, Congress can correct, through further legislation, any perceived error in the Court's decisions. *Id.* at 172-173; *Illinois Brick Co.* v. *Illinois*, 431 U.S. 720, 736 (1977). If Congress has not acted to override this Court's understanding of a statute, changing the Court's interpretation threatens to usurp congressional authority and to discourage Congress from fulfilling its assigned constitutional role. See *Neal* v. *United States*, 516 U.S. 284, 296 (1996) ("Were we to alter our statutory interpretations from case to case, Congress would have less reason to exercise its responsibility to correct statutes that are thought to be unwise or unfair.").[7]

[7] The principle of deference to congressional legislation is not tempered in this case by the common-law tradition. Cf. *State Oil Co.* v. *Khan*,

Congress has had 21 years to consider the implications of *Chakrabarty* and, if it disagreed with the Court, to make a legislative response. Sixteen years have passed since the PTO, relying upon *Chakrabarty*, approved utility patents for sexually reproduced corn varieties. Congress has never expressed disagreement with those decisions. To the contrary, Congress recently expressed its understanding that sexually reproduced plants are patentable under Section 101. See Point II, *infra*. The Court should accord "weight to [Congress's] continued acceptance of" *Chakrabarty*. *Hilton* v. *South Carolina Pub. Rys. Comm'n*, 502 U.S. 197, 202 (1991).

Second, the agriculture industry's reliance upon the availability and enforceability of utility patents for sexually reproduced plants makes this a "classic case" for adherence to the earlier decision. *Planned Parenthood* v. *Casey*, 505 U.S. 833, 855 (1992). Because financial reliance is generally inherent in developing an invention and securing a patent, Congress has been particularly concerned with "doctrinal stability in the field of patent law." *Panduit Corp.* v. *All States Plastic Mfg. Co.*, 744 F.2d 1564, 1573 (Fed. Cir. 1984) (quoting S. Rep. No. 275, 97th Cong., 1st Sess. 5 (1982)). For example, Congress consolidated appeals of cases involving patent claims in the Federal Circuit specifically to address the "significant problem" of uncertainty in judicial precedent. *Id.* at 1574 (quoting S. Rep. No. 275, *supra*, at 5).

As Congress and the Department of Agriculture have found, "[t]he development of new plant varieties is arduous, time-consuming, and costly. Many years must be spent in the development of a single new variety, with no guarantee

522 U.S. 3, 20-21 (1997). Section 101 is to be read strictly in accordance with its broad terms, without "limitations and conditions which the legislature has not expressed." *Chakrabarty*, 447 U.S. at 308 (quoting *United States* v. *Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)).

of its success or profit." H.R. Rep. No. 699, 103d Cong., 2d Sess. 9, 18 (1994) (House Agriculture Committee Report on PVPA amendments, quoting Department of Agriculture testimony). On a daily basis for at least 16 years, plant breeders have engaged in "advance planning of great precision" with the assumption that utility patent protection would be available for qualifying plant inventions. *Casey*, 505 U.S. at 856. Likewise, genetic engineers have undertaken the painstaking work of inserting new genes into plants and recombining plant genes, to give the resulting transgenic plants new and improved properties.[8] Plant breeders and genetic engineers have made large investments in the intellectual property that is protected by their utility patents.[9] Given the magnitude of the industry's reliance upon the current regime that allows protection under Section 101 as well as under the PPA and the PVPA, and given Congress's special concern for stability in interpreting patent law, this Court should be particularly hesitant to revisit *Chakrabarty*'s analysis. See *Payne* v. *Tennessee*, 501 U.S. 808, 828 (1991) ("Considerations in favor of *stare decisis* are at their acme in cases involving property and contract rights, where reliance interests are involved.").

[8] More than 1600 utility patents claim transgenic plant technology, including claims to plants, seeds, and plant tissues. Genetically engineered plants are often protected most effectively under Section 101, rather than under the PPA or the PVPA, because the invention typically involves more than one plant variety, and may relate to a whole species. See p. 23, *infra*.

[9] In 1992, the agriculture industry in the United States spent $400 million on research and development associated with plant breeding, as compared to $97 million in 1980. Economic Research Serv., U.S. Dep't of Agric., *Agricultural Research and Development: Public and Private Investments Under Alternative Markets and Institutions (Agricultural Economic Report No. 735)* 37, Table 10 (1996) (availalble at <http://www.ers.usda.gov/publications/aer735/>).

Third, there is no indication that granting both utility patent protection under Section 101 and certification under the PVPA "has proven to be intolerable simply in defying practical workability." *Casey*, 505 U.S. at 854. Petitioners argue (Br. 22-24, 43-46) that the utility patent and PVPA regimes "conflict[]" in certain details. We explain below that those asserted conflicts do not exist. See Point III, *infra*. The important point for present purposes, however, is that utility patent protection and PVPA certification indisputably are coexisting in practice. Petitioners acknowledge (Br. 5) that the subjects of some of the utility patents at issue in this very case are also the subjects of plant variety certificates. In light of the practical reality that, for more than 15 years, plant inventions protected under the PVPA have been patentable under Section 101 if they meet the requirements of Title 35, by now there would be ample evidence that simultaneous protection produces "intolerable" conflicts between the statutes—if that were the case.

Fourth, there has been no material change in the facts surrounding Section 101 and the PVPA since *Chakrabarty*, see *Casey*, 505 U.S. at 854-855, nor even a change in the evidence of contemporaneous congressional intent being put before the Court, see *NLRB* v. *International Longshoremen's Association*, 473 U.S. 61, 84 (1985). See also note 6, *supra*. Petitioners' arguments were not found persuasive when put forward in *Chakrabarty*, and, having been rejected two decades ago, they should be far less persuasive today.

In light of those considerations, the inquiry in this case should be whether there is "some special reason," aside from arguments about the correctness of *Chakrabarty*, for reopening the Court's constructions of Section 101 and the PVPA. *Casey*, 505 U.S. at 864. No such special reason exists.

II. CONGRESSIONAL ACTION SINCE *CHAKRABARTY* AND *HIBBERD* CONFIRMS THAT SEXUALLY REPRODUCED PLANTS ARE PATENTABLE UNDER SECTION 101

Petitioners contend (Br. 24-26) that, apart from whether Congress intended to preclude utility patent protection for plants when it enacted the PVPA in 1970, later Congresses have understood that the PVPA's protection is exclusive of patent protection under Section 101. Legislative developments since *Chakrabarty* and *Ex parte Hibberd*, 227 U.S.P.Q. (BNA) 443 (Bd. Pat. App. & Interf. 1985), however, disprove petitioners' view.

The most conspicuous fact about Congress's reaction to *Chakrabarty* and *Hibberd* is that Congress has not stopped the PTO from issuing utility patents for sexually reproduced plants under Section 101. Cf. *Blue Chip Stamps* v. *Manor Drug Stores*, 421 U.S. 723, 733 (1975) ("Congress's failure to reject [a judicial construction of the Securities and Exchange Act] argues significantly in favor of acceptance of [the lower courts' construction] by this Court."); *Blau* v. *Lehman*, 368 U.S. 403, 412-413 & n.13 (1962) (same). That failure to act is especially significant because Congress has amended the PVPA and the Patent Act in other respects since *Hibberd*, and therefore had repeated opportunities to override the PTO's application of Section 101 if it disagreed. Yet, during the late 1980s and early 1990s, legislators addressed related questions under the patent laws without suggesting that Congress should override *Hibberd*.

In 1988, the PTO's issuance of the first patent for a transgenic animal (the "Harvard mouse") prompted congressional interest in *Chakrabarty*. Soon thereafter, several bills (none of which became law) were introduced to address the issuance of patents on animals and humans. For example, the Transgenic Animal Patent Reform Act (H.R. 4970),

which the House approved during the 100th Congress, addressed farm uses of patented animals, and would have prohibited the patenting of human beings, but it would not have placed any restriction on the patentability of plants. See 134 Cong. Rec. 23,564, 23,565-23,566 (1988).

During the 101st Congress, Senator Hatfield introduced legislation that would have imposed a moratorium on patenting animal life. In so doing, he criticized the PTO's application of *Chakrabarty* to that technology. 136 Cong. Rec. 2564, 2565 (1990). Senator Hatfield, however, stressed that his bill was "not an attempt to halt the promising field of genetic engineering," and that "[t]he various techniques of biotechnology * * * when used responsibly, have enormous potential in a number of areas including * * * agricultural products." *Id.* at 2564. Senator Hatfield thus sought "to rescind" PTO precedent that allowed the patenting of genetically engineered animals (*id.* at 2565), without affecting PTO precedent that allowed the patenting of sexually reproduced plants. Representative Cardin, who introduced Senator Hatfield's bill in the 102d Congress, made an almost identical statement regarding his legislation. 138 Cong. Rec. 9590 (1992). Thus, at a time when members of Congress were actively considering the PTO's patenting of living things and its implementation of *Chakrabarty*, there was no movement to stop the PTO from issuing patents for sexually reproduced plants.

During the 104th Congress, Senator Kerrey went one step further when he introduced a set of proposed amendments to the PVPA. In his explanation of the proposed amendments, Senator Kerrey explicitly noted that "[b]oth asexually and sexually-reproduced plants which have been developed by traditional breeding, genetic engineering, tissue culture, and various other methods have received utility patents." 139 Cong. Rec. 19,979, 19,980 (1993). There is no evidence of legislative disagreement with that practice.

In 1999, Congress acquiesced affirmatively in *Chakrabarty* and *Hibberd*. That year, Congress amended 35 U.S.C. 119 to enable utility patent applicants in the United States to obtain a right of priority retroactively, back to the date on which they filed a plant breeder's rights application in a qualifying foreign country. Pub. L. No. 106-113, Tit. II, Div. B, § 1000(a)(9), 113 Stat. 1536. New Section 119(f) of Title 35 provides:

> Applications for plant breeder's rights filed in a [World Trade Organization (WTO)] member country (or in a foreign [International Convention for the Protection of New Varieties of Plants (UPOV)] Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents.

35 U.S.C. 119(f) (Supp. V 1999).

The language of Section 119(f), as part of the general provisions of Title 35 rather than the PPA (35 U.S.C. 161-164 (1994 & Supp. V 1999)), suggests recognition that plants are patentable under Section 101. And if there were any doubt on that score, it is resolved by the Conference Report that accompanied new Section 119(f). See H.R. Rep. No. 464, 106th Cong., 1st Sess. 145-146 (1999). The Conference Report explains that under Section 119 as it stood before the amendment, plant breeders who had secured intellectual property protection in countries that "provide only a sui generis system of protection for plant varieties," and do not issue patents or inventor's certificates for plants, could not obtain priority rights in the United States based upon their foreign filings. *Ibid.* Under new Section 119(f), applicants could "base a priority claim on a foreign application for a plant breeder's right [that is not a patent or an inventor's

certificate] when seeking plant patent *or utility patent protection* for a plant variety in this country." *Id.* at 146 (emphasis added). As of 1999, therefore, Congress clearly understood and accepted that utility patents are available for plant varieties under Section 101.

In an effort to show that recent Congresses have not deemed sexually reproduced plants patentable, petitioners cite (Br. 25-26) a 1998 amendment to 35 U.S.C. 163, which addressed the enforcement of plant patents against the unauthorized use, sale, and importation of plant parts. See Plant Patent Amendments Act of 1998, Pub. L. No. 105-289, § 3, 112 Stat. 2781. Petitioners argue that "[t]here was no [similar] amendment to § 101 because none was needed since § 101 does not afford protection to plant varieties." Br. 25-26. Petitioners are right that no amendment to the general provisions of the Patent Act was needed, but that was so for a different reason. Congress's statement of Findings and Purposes in Public Law No. 105-289, § 2, 112 Stat. 2780, explains that holders of plant patents under the PPA were losing royalties due to the sale of plant parts from illegally reproduced and imported plants, and that the amendment to Section 163 was needed to protect against such unauthorized sales. The 1998 amendment therefore closed, for plant patents, a loophole that Congress had closed four years earlier for utility patents. As amended in 1994, 35 U.S.C. 271(c) provides:

> Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

The Uruguay Round Agreements Act, Public Law No. 103-465, Tit. V, § 533(a)(2), 108 Stat. 4989, substituted, in the first lines of the above paragraph, the phrase "offers to sell or sells within the United States or imports into the United States" for the word "sells." See 35 U.S.C. 271 note ("Amendment of Section"). Having amended the general provisions of the Patent Act in 1994 to address infringing imports, Congress had no need to make any further amendment to protect utility patent holders against infringing imported plant parts.

III. GRANTING UTILITY PATENTS FOR SEXUALLY REPRODUCED PLANTS UNDER SECTION 101 DOES NOT CONFLICT WITH THE PVPA

Petitioners also argue (Br. 22-24, 43-46) that Congress *must* have meant to narrow the scope of patentable subject matter under Section 101 when it enacted the PVPA, because the terms and conditions under which plant breeders hold plant variety certificates are inconsistent with the terms and conditions surrounding utility patents. That argument for narrowing the construction of Section 101 that this Court announced in *Chakrabarty* must overcome a very high hurdle. "[I]t is a 'cardinal rule'" that repeals by implication are disfavored. *County of Yakima* v. *Confederated Tribes & Bands of the Yakima Nation*, 502 U.S. 251, 262 (1992) (quoting *Posadas* v. *National City Bank*, 296 U.S. 497, 503 (1936)); see *Matsushita Elec. Indus. Co.* v. *Epstein*, 516 U.S. 367, 381 (1996) (noting that "[t]he rarity with which [the Court] ha[s] discovered implied repeals is due to the relatively stringent standard for such findings"). For there to be an implied repeal, it must be impossible for the statutes to coexist. *Radzanower* v. *Touche Ross & Co.*, 426 U.S. 148, 153-157 (1976). "There must be a positive repugnancy

between the provisions of the new law, and those of the old; and even then the old law is repealed by implication only *pro tanto* to the extent of the repugnancy." *United States* v. *Borden Co.*, 308 U.S. 188, 198-199 (1939) (internal quotation marks omitted).[10]

All of the expert bodies that have considered the issue have found that the PVPA and Section 101 can coexist. The Senate Judiciary Committee, when it considered the proposed PVPA, did not believe that the bill limited the scope of patentability under the Patent Act. S. Rep. No. 1246, 91st Cong., 2d Sess. 3 (1970) (PVPA "does not alter protection currently available within the patent system"). The PTO, which is charged with administering Section 101 as well as the plant-specific provisions of the PPA, similarly found in *Hibberd* that the PVPA and Section 101 do not conflict. 227 U.S.P.Q. (BNA) at 446-447. The Department of Agriculture's Plant Variety Protection Office has found that the availability of utility patent protection for sexually reproduced plants does not impair its administration of the PVPA. Finally, the Federal Circuit, which has exclusive jurisdiction over both patent claims and claims under the PVPA (see 28 U.S.C. 1295(a), 1338 (1994 & Supp. 1999)),

[10] *Brown & Williamson*, on which petitioners heavily rely (Br. 33-37), is entirely consistent with this Court's strong presumption against implied repeal of established statutory provisions. The Court determined in *Brown & Williamson*, 529 U.S. at 137-139, 155-158, that regulation of tobacco products under the general provisions of the Food, Drug, and Cosmetic Act (FDCA) was "incompatible with" later-enacted federal statutes that specifically addressed tobacco, *id.* at 156. In particular, the FDCA, if applicable, would have required the FDA to ban cigarettes and smokeless tobacco, which was "foreclosed" by the tobacco-specific laws. *Id.* at 137. As explained below, there is no such repugnance between the PVPA and Section 101 when both are applied to sexualy reproduced plants. Moreover, as shown in Point II, above, Congress has affirmatively acquiesced in the patenting of sexually reproduced plants. There was no such acquiescence to regulation of tobacco under the FDCA.

found in this case that there is no irreconcilable inconsistency between plant certification and utility patent coverage for man-made plants. Pet. App. 8-9. That common conclusion by the Senate committee that oversees patent law; by the two agencies charged with administering the laws under which plants are protected; and by the court with "special expertise" in patent matters (*Warner-Jenkinson Co.* v. *Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997)), is correct. Although the terms of protection under Section 101 and the PVPA differ, they do not conflict. Cf. *Roche Prods., Inc.* v. *Bolar Pharm. Co.*, 733 F.2d 858, 863-865 (Fed. Cir.) (rejecting argument that amendments to FDCA created implied defense to patent infringement), cert. denied, 469 U.S. 856 (1984).

As an initial matter, the scope of certification under the PVPA is narrower than the scope of patentability available for sexually reproduced plant technologies under Section 101. Whereas the PVPA allows protection only for particular plant varieties, Section 101 allows patent protection for an invention that subsumes multiple sexually reproduced plant varieties. For example, when all varieties of cotton plants can be altered for better pest-resistance by adding a new gene, the inventor of the altered cotton can receive a single utility patent covering all the new varieties. See U.S. Patent No. 5,608,142 (Mar. 4, 1997). That kind of blanket protection for multiple varieties is not available under the PVPA.

Even with respect to their common subject matter, Section 101 and the PVPA establish distinct criteria for protection. As a general rule, a plant certificate under the PVPA is easier to obtain than a utility patent (just as Congress intended when it enacted the PVPA, see *Chakrabarty*, 447 U.S. at 311-313). In addition to easing the "written description requirement" discussed in *Chakrabarty* (see 447 U.S. at 312), Congress made plant variety certification

available under 7 U.S.C. 2402 (1994 & Supp. V 1999) even if the new variety does not meet the usefulness and non-obviousness requirements of the Patent Act, 35 U.S.C. 101-103 (1994 & Supp. V 1999). A plant certified under the PVPA also is not required to undergo the extensive examination required for a utility patent. See 35 U.S.C. 131 (1994 & Supp. V 1999); 35 U.S.C. 132.

Although typically harder to obtain, a utility patent generally affords greater protection to its holder than a plant variety certificate. For example, as petitioners stress (Br. 22, 43-44), the PVPA establishes some defenses to infringement, especially 7 U.S.C. 2543 (farmer's right to save and replant seed) and 7 U.S.C. 2544 (use of a protected variety for breeding and research), that would not be a defense to infringement of a utility patent.[11] The differences in defenses do not make it impossible to apply both statutes to asexually reproduced plants, however. Even if the same seed were protected under both Section 101 and the PVPA, it would simply be the case that saving the seed or using the seed in breeding or research would infringe the utility patent, but not the plant certificate. There is no inconsistency between finding infringement of a utility patent and the defenses enumerated in the PVPA, for the PVPA defenses do not grant any affirmative right to save protected seed or to use seed or use a protected plant variety for breeding and research. The PVPA provides only that those uses are not infringements *of the protections afforded under the PVPA*. 7 U.S.C. 2543, 2544.

Furthermore, the stronger protection against infringement afforded to a utility-patent holder is harmonious with the utility-patent holder's obligation to make an "enabling disclosure" that tells the public how to make and use the

[11] The defenses to a patent infringement suit are set forth in 35 U.S.C. 282 (1994 & Supp. V 1999).

invention after the patent term expires. See 35 U.S.C. 112; see also 35 U.S.C. 114 (1994 & Supp. V 1999) (PTO may require specimens for inspection or experiment). The inventor's disclosure required by the Patent Act is "the *quid pro quo* of the right to exclude." *Kewanee Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 484 (1974). Applicants for plant variety certificates need not provide similar disclosure. See 7 U.S.C. 2422; see also *Chakrabarty*, 447 U.S. at 312 (discussing relaxed written description requirement of PPA).[12] Because certificate holders under the PVPA are not required to make the same level of contribution to the public that patent holders must make, Congress reasonably determined that certificate holders' rights to exclude others from using their inventions should be less absolute during the term of the certificate than the rights of patent holders under Section 101.

Petitioners err in asserting (Br. 44-47) that the possibility of liability under both the Patent Act and the PVPA for the same infringing act makes the two statutes inherently re-

[12] The PVPA requires a description of the plant, along with a deposit of seed in a public depository. 7 U.S.C. 2422(2) and (4); see 7 C.F.R. 97.6. The deposited seed is used to meet the needs of the Plant Variety Protection Office and to ensure the long-term availability of germ plasm for research. The seed is not available to the general public during the term of the PVPA certificate. Seeds deposited in conjunction with a utility patent, by contrast, are immediately in the public domain, although no infringing use may be made of them until the patent term expires. See 37 C.F.R. 1.801-1.809 (rules for disclosure of biotechnology inventions through deposits); see generally *Ajinimoto Co.* v. *Archer-Daniels-Midland Co.*, 228 F.3d 1338, 1345-1346 (Fed. Cir. 2000) (discussing enabling disclosure through deposit), cert. denied, 121 S. Ct. 1957 (2001). Petitioners therefore are incorrect in suggesting (Br. 29-30 n.10) that respondent has made a less complete disclosure of its patented inventions than would have been required under the PVPA. See also 2 J.A. 39 (noting seed deposits for U.S. Patent No. 5,491,295), 2 J.A. 50 (noting deposits for U.S. Patent No. 5,506,367).

pugnant. There is no general prohibition on "dual protection" (Pet. Br. 44) of an innovation. See, *e.g.*, *Mazer* v. *Stein*, 347 U.S. 201, 216-219 (1954) (holding that a manufacturer's design patent is not a bar to a copyright infringement suit). The PTO's *Manual of Patent Examining Procedure* (7th ed. 1st rev. Feb. 2000) explains, for example, that "[t]here is an area of overlap between copyright and design patent statutes" (*id.* § 1512(I)); that "[a] design patent and a trademark may be obtained on the same subject matter" (*id.* § 1512(III); and that "[i]nventions claimed under 35 U.S.C. 101 may include the same asexually reproduced plant which is claimed under [the PPA]" (*id.* § 1601). Dual grounds for recovery, moreover, work no unfairness on the infringer because the plaintiff can recover damages only once. See, *e.g.*, *American Safety Table Co.* v. *Schreiber*, 415 F.2d 373, 381-382 (2d Cir. 1969) (bar against double recovery precludes damages for both patent infringement and unfair competition during patent infringement period), cert. denied, 396 U.S. 1038 (1970); see also *Protectors Ins. Serv., Inc.* v. *United States Fid. & Guar. Co.*, 132 F.3d 612, 615-618 (10th Cir. 1998) (in contract case, applying prohibition on double recovery for a single economic injury).[13]

Ropat Corp. v. *McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976), and *TrafFix Devices, Inc.* v. *Marketing Displays, Inc.*,

[13] Petitioners suggest (Br. 21) that 7 U.S.C. 2541(a)(9), which protects the holder of a plant patent from an infringement suit based on asexual reproduction that is brought by the holder of a plant variety certificate, shows that Congress did not intend dual protection under Section 101 and the PVPA. Section 2541(a)(9), however, does not address dual protection for sexually reproduced varieties. It indicates only that one person can have a plant variety certificate on a sexually reproduced plant under the PVPA, and another person can have a plant patent on the same plant, asexually reproduced, under the PPA. Section 2541(a)(9) therefore undercuts, rather than supports, petitioners' argument that the various forms of intellectual property protection are mutually exclusive.

121 S. Ct. 1255 (2001), do not support petitioners' theory that protection under both Section 101 and the PVPA is improper. See Pet. Br. 45-47. In *Ropat*, the Seventh Circuit applied the principle that the holder of a utility patent under Title 35 should not be permitted to extend the term of that patent by obtaining a design patent under Title 35 for the very same invention. See 535 F.2d at 380. *Ropat* did not address simultaneous protection of the same innovation under different statutory schemes.

In *TrafFix*, this Court held that an expired utility patent was "strong evidence" of functionality, which tended to undermine a claim that the same essential feature (a spring design for road signs) was eligible for trade dress protection under the Lanham Act, 15 U.S.C. 1125(a)(3) (Supp. V 1999). 121 S. Ct. at 1260-1261. *TrafFix* involved the "evidentiary significance" of a patent issued under Section 101. *Id.* at 1261. It did not present the question of whether simultaneous protection under different intellectual property statutes is permissible for innovations that meet the requirements of each statute. Indeed, having found the claimed feature to be functional and therefore ineligible for trade dress protection under the Lanham Act, the Court specifically declined in *TrafFix* to address the argument that in any event the holder of an expired utility patent could not, consistent with the Patent Clause, U.S. Const. Art. I, § 8, Cl. 8, subsequently claim trade dress protection that would have the practical effect of extending the patent. 121 S. Ct. at 1263.

At bottom, petitioners' objections to patenting sexually reproduced plant innovations rest on the policy argument that utility patents afford too much protection to plant developers, at the expense of farmers and others who wish to use these new varieties without paying for that right during the patent term. See Pet. Br. 48-49; see also American Corn Growers Ass'n Br. 13-30. Petitioners object that the agriculture industry suffers when its members must

consider "the risk of becoming embroiled in a patent infringement lawsuit" (Br. 49), but a similar argument could be made against *any* application of intellectual property laws, including application of the PPA or the certification provisions of the PVPA.

As the government noted in *Chakrabarty*, the proper balance to be struck in the area of patenting living things "is far from clear." 79-136 Reply Br. for Pet. at 5. What is clear, however, is that such questions are for Congress to answer. And there is no reason to doubt that Congress could sensibly have decided that allowing utility patent protection for qualifying innovations in sexually reproduced plant varieties best serves the public interest. As this Court has explained, rewarding patent holders for their enterprise is only "a secondary consideration" in affording patent protection. *United States* v. *Paramount Pictures, Inc.*, 334 U.S. 131, 158 (1948). "The economic philosophy" underlying patent protection "is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of * * * inventors." *Mazer*, 347 U.S. at 219. It follows that users of innovations will bear some cost for that right during the term of protection.

The utility patents at issue in this case suggest readily identifiable benefits to farmers, for which some farmers may be willing to pay. One of the corn lines protected by respondent's utility patents, for example, is said to have a superior yield (2 J.A. 29-30), while another is said to have good drought tolerance and disease tolerance (2 J.A. 44). As a result of respondent's seed deposits, those lines will be available to the general public for at least 30 years, and longer if there is ongoing demand for access to the seed. See 37 C.F.R. 1.806.

When plant researchers undertake an innovation in reliance upon the availability of patent protection, benefits accrue to the general public—not just to "large corporate

entities," as petitioners suggest (Pet. Br. 49). For example, patented plants have been genetically engineered to resist pests so that farmers can bring their crop to harvest with a greater yield and with less use of pesticides (thus lowering the cost of producing food and addressing pollution concerns). See U.S. Patent No. 5,763,245 (June 9, 1998). Other engineered plants work as "edible vaccines," so that humans or animals could be vaccinated by eating, say, a potato. See U.S. Patent No. 6,034,298 (Mar. 7, 2000).

Dr. Chakrabarty's bacterium was eligible for a patent because it had been genetically engineered by human intervention to digest crude oil and clean up pollution. See 447 U.S. at 305. The PTO has issued utility patents for genetically engineered plants that meet the same social need. One patented process produces plants that resist and reduce mercury and metal contamination in the soil. See U.S. Patent No. 5,668,294 (Sept. 16, 1997). Another produces plants that detoxify herbicides and other organic compounds. See U.S. Patent No. 6,166,290 (Dec. 26, 2000). The new field of phytoremediation, which includes such innovations, is precisely the kind of "unforeseeable" development that the Court in *Chakrabarty* anticipated when it emphasized Congress's decision to give the scope of patentable innovations under Section 101 comprehensive breadth. 447 U.S. at 316. Petitioners have failed to show any clear instruction from Congress to deny such plant innovations, if they otherwise meet the requirements of Section 101, the same protection afforded to the comparable bacterial innovations in *Chakrabarty*.

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

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United States Supreme Court

J.E.M. Ag Supply, Inc.
dba Farm Advantage Inc., *et al.*
Petitioners
v.
Pioneer Hi-Bred International, Inc.
Respondent

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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Brief for *Amici* Malla Pollack and other Law Professors Supporting Reversal

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INTEREST OF THE *AMICI CURIAE*[1]

Amici curiae ("Professors") are law professors with no financial interest in the outcome of this litigation. As experts in intellectual property, the Constitution, or both, *amici* hope that their expertise may be of benefit. Professors file this brief in the sole interest of assisting this Court to properly construe United States intellectual property law. *See, e.g.*, David Lange, *Recognizing the Public Domain*, 44 (No. 4) Law & Contemp. Probs. 147, 176 (1981) (in view of collective action problems, requesting courts to appoint *guardians ad litem* for the public domain in intellectual property cases or, at the least, to welcome *amicus* participation).

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1. No part of this brief was authored by counsel for any party to this case. The cost of this filing has been paid in full by Malla Pollack with the help of her faculty allowances as a visiting associate professor at Northern Illinois University, School of Law.

AUTHORITY TO FILE

Both parties have given permission for the filing of this *amicus* brief. Copies of the permission letters are attached to the proof of service submitted to the Clerk.

SUMMARY OF ARGUMENT

This case is not about how the United States should protect invention in sexually reproduced plants. This case is about the institutional process required to make that decision. The United States Constitution mandates that Congress make protection decisions after considering the progress of the useful arts. This basic institutional requirement is not met as to utility patents on sexually reproduced plants.

The Constitution allows Congress to grant "exclusive rights" to "inventors" in their "discoveries" only when such rights "promote the progress of . . . the Useful Arts." U.S. Const. Art. I, § 8, cl. 8 ("the Intellectual Property Clause"). When Congress considered intellectual property protection

for sexually reproduced plants, it provided a nuanced scheme of rights and exemptions. 7 U.S.C. §§ 2321-2583, Plant Variety Protection Act of 1970 ("PVPA"). At that time, Congress stated that sexually reproduced plants were not possible subject matter for utility patents under the Patent Act, 35 U.S.C. §§ 1 et seq. Congress, therefore, saw no need to amend Title 35 to prevent plant breeders from overriding the exemptions from liability in the PVPA by also obtaining utility patents.

Whatever the status of 1970 congressional statements regarding the earlier meaning of the Patent Act, these statements evidence that, in 1970, Congress decided that progress was best served without utility patent protection on sexually reproduced plants. For such plants to be entitled to utility patent protection, therefore, Congress must reconsider and decide that such broader protection would now promote the progress of the useful arts. Congress has not done so.

Until Congress makes this determination, utility patents on sexually reproduced plants are unconstitutional.

ARGUMENT

"The Constitution creates a Federal Government of enumerated powers, " *United States v. Lopez*, 514 U.S. 549, 552 (1995), as the Federalists emphasized to the ratifying public, *see, e.g.,* Federalist Papers at 541 (Modern Library ed. 1937) ("The plan of the convention declares that the power of Congress . . . shall extend to certain enumerated cases. This specification of particulars evidently excludes all pretension to a general legislative authority.") (No. 83); *id.* at 82 (No. 13); *id.* at 192-93(No. 31); *id.* at 268-69 (No. 41); *id.* at 534-35 (No. 82).

Some limitations on the federal government are written into the Constitution by negative implication -- a then common technique. *See, e.g., id.* at 196-97 (No. 32, discussing pregnant negatives in relation to the taxing

power); *id.* at 541 (quoted above; No. 83); *id.* at 559 (danger of including an incomplete list of rights; No. 84); I William Winslow Crosskey, Politics and the Constitution 486 (1953) ("[T]he enumerating of particular governmental powers *in order* to express limitations upon them was a favorite device of the Federal Convention.")(emphasis in original).

The Intellectual Property Clause, Art. I, sec. 8, cl. 8 ("The Congress shall have the power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries"), is formulated both to grant powers and, by implication, to deny others. *See, e.g., Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966)("both a power and a limitation"); I Crosskey, *supra*, at 486. These limitations may not be escaped by claiming power under a more general clause, such as the Commerce Clause. *Accord Railway Labor Executives' Assn. v. Gibbons*, 455 U.S. 457,

471 (1982) ("uniformity" requirement in Bankruptcy Clause implicitly limits the Commerce Clause). Nor may the necessary and proper clause be used to negate constitutional limits. *See M'Culloch v. Maryland*, 17 U.S. 316, 423 (1819) (Congress may not "adopt measures which are prohibited by the Constitution" or "pass laws for the accomplishment of objects not intrusted to the government.").

This Court has repeatedly warned that promoting progress is the required goal of the rights Congress has power to issue under the Intellectual Property Clause. *See Graham v. John Deere Co.*, 383 U.S. 1, 6 (1966) (rights "must promote the progress of . . . useful arts. This is the standard expressed in the Constitution and it may not be ignored.")(internal quotations and citations omitted); *see e.g., Feist Publications, Inc. v. Rural Tel. Svc. Co.*, 499 U.S. 340, 349-50 (1991) ("The primary objective of copyright is not to reward the labor of authors, but to promote the

progress of science and useful arts.")(citations and internal quotation marks omitted); *Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 558 (1985) ("[T]he ultimate aim is . . . to stimulate the creation of useful works for the general public.")(internal editing, citations, and quotation marks omitted).

The purpose limitation in the Clause would be unnecessary if all conceivable "exclusive rights" granted for "limited times" to "inventors" in their "discoveries" would necessarily "promote the progress of . . .the useful arts." The proposition that all such rights promote progress is facially absurd. For example, this Court has repeatedly held that scientific principles (such as $E=mc^2$), mathematical principles (such as the Pythagorean Theorem), and abstract intellectual processes (such as methods of making calculations) cannot be protected by patents, because to deprive the public of these "basic tools of scientific and technological work, "

Gottschalk v. Benson, 409 U.S. 63, 67 (1972), would hinder, rather than promote, progress. *See Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *Parker v. Flook*, 437 U.S. 584, 589-9 (1978).

Empirical research agrees: costs and benefits differ depending on, among other variables, the type of subject matter and the structure of the related industries. *See. e.g.*, Roberto Mazzoleni & Richard R. Nelson, *Economic Theories About the Benefits and Costs of Patents*, 32 J. of Econ. Issues 1031, 1032 (1998) ("The empirical work that has been done on the effects of patents suggests that the kinds of benefits and costs associated with patents differ across economic sectors and across kinds of inventions."). If all rights promoted progress, economists would not have created a mass of conflicting literature disagreeing about the most effective bounds for patent coverage. *See, e.g.*, Adam B. Jaffe, *The U.S. Patent System in Transition: Policy*

Innovation and the Innovation Process, Nat'l Bur. Econ. Res., Working Paper 7280 (1999) (reviewing recent economic analyses); A. Samuel Oddi, *Un-Unified Economic Theories of Patents*, 71 Notre Dame L. Rev. 267, 268 n.6 (1996) (conflicting literature on patents' economic effects).

The issue in this case is, therefore, not simply one of statutory construction. The Intellectual Property Clause only warrants rights which promote the progress of the useful arts; not all rights do so. Before enacting any specific scheme into law, therefore, Congress must consider whether that specific scheme is likely to promote progress. If Congress mistakenly enacts a statute whose words might be read to allow patent protection outside the scope of Congress' progress determination, these purported rights are void, because they are beyond Congress' power. The Court, therefore, should not mechanically enforce the broadest possible reading of statutory language. This Court should, instead, vindicate the

legislative process by waiting for Congress in the first instance to determine how to promote progress.

The broad wording of 35 U.S.C. § 101, therefore, is not determinative. Long after enacting Section 101, Congress took a close look at the proper, progress-enhancing protection for sexually reproduced plants.[2] After this careful, fact-intensive analysis, Congress decided that sexually reproduced plants should be protected by the Plant Variety Protection Act ("PVPA"), 7 U.S.C. §§ 2321-2583. *See* H. Rep. No. 91-1605, 91st Cong., 2nd Sess. 1, *reprinted in* 1970 U.S.C.C.A.N. 5082, 5082 (recommending PVPA because it would

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2. The PVPA was enacted under the Intellectual Property Clause. "It is the intent of Congress to provide the indicated protection for new varieties by exercise of any constitutional power needed for that end, so as to afford adequate encouragement for research, and for marketing when appropriate, to yield for the public the benefits of new varieties. Constitutional clauses 3 and 8 of article I, section 8 are both relied upon." 7 U.S.C. § 2581.

"promot[e] progress in agriculture in the public interest).[3]

While enacting the PVPA, Congress indicated that it believed that the Patent Act did not cover sexually reproduced plants. H. Rep. No. 91-1605, *reprinted in* 1970 U.S.C.C.A.N. at 5083 ("Under patent law, protection is presently limited to those varieties of plants which reproduce asexually . . . "). Congress, therefore, saw no need to amend Title 35 to prevent plant breeders from overriding the exemptions from liability in the PVPA by also obtaining utility patents. Congress struck a careful balance as to how much protection and what exemptions or limitations on protection it wished to provide to promote progress in the development of sexually reproduced plants while protecting the interests of farmers and the public. Congress chose a

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3. *Amici* will not burden this Court by repeating Petitioners' explanation of the differences between PVPA and utility patent protection or the amount of congressional investigation supporting the PVPA.

balance which did not include Title 35 protection for sexually reproduced plants.

The issue is not whether a 1970 congressional statement is binding on the pre-1970 meaning of the Patent Act. The issue is what this congressional statement shows about the progress conclusion reached by the 1970 Congress. In 1970, Congress struck a balance. If this Court in 2001 accepts a much broader reading of § 101 of Title 35 than the 1970 Congress recognized, this Court will be judicially overriding the balance careful chosen by the 1970 Congress. This Court, furthermore, will be doing so without the requisite legislative inquiry into the best way to promote progress in the art of sexually reproduced plants.

This Court has sufficient evidence that the 1970 Congress pondered and rejected Title 35 protection of sexually reproduced plants. Legislative history is a good indication of what Congress considered. *See, e.g., United*

States v. Lopez, 514 U.S. 549, 562 (1995)("[A]s part of our independent evaluation of constitutionality under the Commerce Clause we of course consider legislative findings, and indeed even congressional committee findings, regarding effect on interstate commerce.").

The only reasonable conclusion from the legislative record discussed above is that the 1970 Congress concluded (1) that the PVPA scheme was the one which would best promote progress when applied to sexually reproduced plants, and (2) that the Title 35 utility patent scheme was not the proper way to promote the progress of science when applied to sexually reproduced plants.

The Constitution gives Congress the sole power to make such a progress determination. Neither the Patent and Trademark Office nor the courts may do so. In 1970, Congress decided that, as to sexually reproduced plants, progress was best served with PVPA protection and without

Title 35 utility patent protection. Absent some showing that Congress at some later date, after deliberation, decided that utility patent protection of sexually reproduced plants would promote progress, this Court must void the patents at issue as constitutionally infirm – regardless of what standard statutory construction principles alone would suggest.

As Petitioners demonstrate, however, standard statutory construction principles agree. The PVPA trumps the Patent Act because it is both the later and the more narrowly focused statement of Congress. *See Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980)(stating that Congress may narrow 35 U.S.C. § 101's wide definition of patentable subject matter by "craft[ing] a statute specifically designed for" a specific class of inventions).

The Federal Circuit usurped a legislative function by substituting a new balance for that which Congress chose when it enacted the PVPA.

CONCLUSION

For all the reasons discussed above, this Court should hold that sexually reproduced plants are not eligible for utility patents under the current statutory scheme – thus deferring to Congress for a legislative determination of whether current conditions warrant changing the progress-enhancing balance struck by the 1970 Congress.

Respectfully submitted, May 4, 2001

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IN THE

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(doing business as Farm Advantage, Inc.),
FARM ADVANTAGE, INC., LARRY BENZ,
MERLE PRUETT (doing business as Siouxland Seeds, Inc.),
KEVIN WOLFSWUNKEL, TIM KAMSTRA, and
TOM EISCHEN SEED & CHEMICALS,
Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF *AMICI CURIAE* OF AMERICAN CORN GROWERS ASSOCIATION & NATIONAL FARMERS UNION IN SUPPORT OF THE PETITIONERS

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QUESTION PRESENTED

Are utility patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants and plant varieties?

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STATEMENT OF INTEREST OF *AMICI CURIAE* [1]

Amicus American Corn Growers Association ("ACGA") is a non-profit, national commodity association representing the interests of thousands of corn producers in twenty-eight (28) states. ACGA works to develop national legislation that protects the interests of corn producers and the rural communities that depend on them. Through the development of educational and promotional programs, the ACGA represents the needs of corn growers nationwide. The extension of utility patent protection to sexually reproducing plants has directly affected ACGA members. The patenting of seeds has taken away their Congressionally supported right to save seed. Additionally, it has raised the cost of farm inputs through a steady consolidation of the seed industry and its accompanying increase in seed prices. Finally, many ACGA members have financially supported public plant breeding research through mandatory national and state commodity check off (excise taxes), the benefits of which are increasingly stifled by the extension of utility patent rights to sexually reproducing plants.

Amicus the National Farmers Union ("NFU"), officially called the Farmers Educational and Cooperative Union of America, was founded in 1902. NFU is a general farm organization with a membership of nearly 300,000 farm and ranch families throughout the United States. NFU is a federation, with the presidents of the 23 state and 1 regional (covering three states) Farmers Union organizations serving as its board of directors.

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[1] Letters from all parties consenting to the filing of this brief have been filed with the Clerk. No counsel for a party authored this brief, in whole or in part, and no person or entity other than *amici curiae*, or their counsel, made a monetary contribution to the preparation or submission of this brief.

For nearly 100 years, NFU's primary goal has been to sustain and strengthen family farm and ranch agriculture. NFU believes that a vibrant agricultural sector is the foundation for strong farm and ranch families and thriving rural communities. These vibrant rural communities, in turn, are vital to the health and economic well-being of the entire U.S. economy. Family farm agricultural production is an important part of America's heritage.

The extension of utility patent protection to sexually reproducing plants has directly affected NFU's members. The patenting of seeds has taken away their Congressionally supported right to save seed. Additionally, it has raised the cost of farm inputs through a steady consolidation of the seed industry and its accompanying increase in seed prices.

SUMMARY OF ARGUMENT

For over seventy years, Congress has repeatedly rejected the notion that sexually reproducing plants are patentable subject matter under section 101 of the Patent Act. *See* 35 U.S.C. § 101. Moreover, Congress has conducted several extensive reviews of the unique characteristics of sexually reproducing plants and specifically rejected extending utility patent protection to them. Cognizant of the significant negative impacts upon the farming and plant breeding communities that would be caused by extending patent protection to sexually reproducing plant varieties, Congress in 1970 crafted a compromise, the Plant Variety Protection Act ("PVPA"), 7 U.S.C. § 2321, *et seq*. The PVPA granted plant breeders a unique type of intellectual property protection, one that still allowed, *inter alia*, for research on and the saving of protected seed. Thus, Congress explicitly created a plant protection regime that had several provisions distinctly different from the broader protection granted in utility patent protection.

In 1985, the United States Patent and Trademark Office ("PTO") unilaterally overturned the PVPA, and stood

Congressional intent on its head, by arbitrarily and capriciously granting utility patents on sexually reproducing plant varieties. 1060 O.G. 4 (Oct. 8, 1985).[2] The Pioneer Hi-Bred patents at issue in this case are an extension of PTO's *ultra vires* agency action and should not be upheld. As Congress had long feared, the PTO's granting of utility patent protection has had profoundly destructive impacts on farming and plant breeding communities. PTO's illegal patenting policy has stifled, and is curtailing, important research in creating new improved plant varieties. It is also seriously eroding the diverse U.S. agricultural germplasm base upon which the nation's, and much of the world's, food security depends. Additionally, the PTO policy has resulted in the exponential consolidation of the seed industry which has led, in turn, to a handful of corporations fundamentally dictating deleterious alterations in the nation's farming practices through patent-based "technology-user" fees and agreements. As described herein, the impacts of the misguided PTO patenting policy are significant and continue to profoundly harm the interest of Amici. As tragic as they are, these impacts should not surprise. They reflect the precise reasons why Congress has wisely rejected extending utility patent protection to sexually reproducing plants.

ARGUMENT

I. CONGRESS AND THE LEGISLATIVE HISTORY OF PLANT PATENTING

A. Plant Patent Act of 1930

Before 1930, there were no intellectual property rights attached to the development of unique plant varieties

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[2] After the decision by the Board of Patent Appeals in *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985), the PTO published notice stating "[t]he Patent and Trademark Office is now examining applications including claims to plant life - e.g. plants per se, seeds, plant parts."

regardless of whether they were asexually or sexually reproduced.[3] In 1930, Congress passed the Townsend-Purnell Plant Patent Act ("PPA"), 35 U.S.C. §§ 161-164. The purpose of the PPA was:

> To remove the existing discrimination between plant developers and industrial inventors. To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that is, by grafting, budding, cutting, layering, division, and the like, *but not by seeds*." Sen. Rep. No. 71-315, at 1 (1930) (emphasis added).

During the passage of the 1930 PPA, Congress directly rejected the notion that sexually reproducing plants should be subject to patent protection. As one commenter noted "in 1929 when the matter of *including seeds* in a proposed Plant Patent amendment was presented to officials of the Patent Office, of Congressional Committees, and the U.S. Dept. of Agriculture, it was clearly evident that *no Plant Patent bill could be passed* that *included seed propagated plants*." General Revisions of the Patent Laws: Hearings on S. Res. 37 on S.2, S.1042, S.1377, S. 1691, S.2164, S.2597, Before the Senate Subcomm. on Patents, Trademarks and Copyrights of the Comm. on the Judiciary, 90th Cong. 803 (1968) (Testimony of Paul C. Stark) (emphasis in original).

Throughout passage of the PPA, both houses of Congress explicitly rejected making sexually reproducing plants patentable subject matter under section 101 of the Patent

[3] Attempts in the early 1900's to allow the registration of new plant varieties as trademarks failed. *See* Cary Fowler, *Unnatural Selection* 80-81 (Gordon and Breach eds.) (1994).

Act.[4] A Senate Report noted that: "Whether the new variety is a sport, mutant or hybrid, the patent right granted is a right to propagate a new variety by asexual reproduction. ***It does not include the right to propagate by seeds***. This limitation in the right granted recognizes a practical solution and greatly narrows the scope of the bill." S. Rep. 71-315, at 4 (1930) (emphasis added). The House concurred, stating: "To these ends the bill provides that any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that, is by grafting, budding, cuttings, layering, division, and the like, *but not by seeds*." H.R. Rep. 71-1129, at 1 (1930) (emphasis added).

B. Patent Act Amendments of 1952

Subsequent to 1930, Congress explicitly moved the asexual reproducing plant patent provisions out of the subject matter covered under section 101. During this comprehensive revision of the Patent Act, Congress moved the plant patent provision of the 1930 PPA into Chapter 15 titled "Patents for Plants." Contrary to the Respondent's suggestion, the 1952 amendments merely indicate that Congress was seeking to further clarify its 1930 legislation by creating a chapter unique to plants. The amendments in no way state or imply that Congress was considering extending utility patent protection to sexually reproducing plant varieties and seeds. Rather, the changes creating a separate chapter governing the patenting of asexually reproducing plants actually exhibit Congressional intent to create standards different from that of section 101 when the patentable subject matter was plant material.

[4] Prior to the 1952 Patent Act Amendments, the statutory equivalent of section 101 was found at § 4886 of the Revised Statutes. *See* S. Rep. No. 71-315, at 10 (1930).

C. Development of the PVPA and Rejection of Utility Patents, 1965-1970.

After thirty-five years of providing patent protection solely to asexually reproducing plants, both Congress and the Executive Branch began to revisit patent reform, including the issue of patents as they applied to sexually reproducing plants. On April 8, 1965, through Executive Order 11125, the President's Commission on the Patent System was created. A little less than two years after its creation, the Commission issued its report on patent reform. President's Comm'n on the Patent System, To Promote the Progress of . . . Useful Arts In An Age of Exploding Technology, S. Doc. No. 90-5 (1967). The Commission focused directly on the question of patenting sexually reproducing plants and stated:

> While the Commission acknowledges the valuable contribution of plant and seed breeders, *it does not consider the patent system the proper vehicle for the protection of such subject matter, regardless of whether the plants reproduce sexually or asexually.* It urges further study to determine the most appropriate means of protection. *Id.* at 13 (emphasis added).

The Commission's report was followed by President Johnson's legislative recommendations, embodied in the Patent Reform Act of 1967. U.S. Dept. of Commerce, Communication from the President of the United States, A Draft of Proposed Legislation for the General Revision of the Patent Laws, Title 35 of the United States Code and for Other Purposes, H.R. Doc. No. 90-59 (1967). The presidential legislative proposal maintained the use of patent protection for asexually reproducing plants, but did not seek to expand patent protection to sexually reproducing plants.

During the legislative debate that ensued, the PTO was expressly aware that Congress had never delegated authority to the PTO to issue patents for sexually reproducing plants.

In fact, the PTO was concerned about the Presidential Commission's recommendation concerning plant patents and even issued a Federal Register notice seeking comments about the possible elimination of the 1930 statutory provisions allowing the patenting of asexually reproduced plants. 33 Fed. Reg. 29 (January 3, 1968).

Significantly, during the 1968 debate on patent reform legislation an amendment to allow sexually reproducing plants to be patented was introduced in the Senate. The amendment proposed to insert the word "or sexually" in sections 161 and 163 of the PPA, the net effect of which would be to permit the patenting of sexually reproduced, as well as asexually reproduced varieties. *See* Plant Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 10 (1970). The amendment was defeated. *Id.* In recognizing this legislative defeat, the American Seed Trade Association ("ASTA") stated to Congress, "Attempts to reach agreement on the proposed amendment to the Plant Patent Act failed, and faults in that approach were recognized, so the American Seed Trade Association next undertook to develop a statute more carefully suited for plant variety protection." *Id.* Similarly, the PTO was clearly cognizant of the amendment's defeat and worked with ASTA in the crafting of the PVPA as an alternative form of intellectual property protection for sexually reproducing plants. *Id.* at 55 (Statement of Hon. Burt L. Talcott describing the inability of seeds to be protected under the Patent Act and the crafting of the PVPA alternative by ASTA, PTO, members of Congress and USDA).

Congressional defeat of this amendment and its affirmation of the long standing policy of not extending patent protection under section 101 (or other parts of the Patent Act) for sexually reproducing plants were based on several important

policy decisions. Most notably, Congress deferred to the deep concerns of the United States Department of Agriculture ("USDA"). USDA opposed granting utility patents to sexually reproducing plants because such patents would threaten continuing development and introduction of new varieties of seed. More specifically, the agency feared that seed patenting would severely limit free exchange of data, restrict open discussion of research and diminish the exchange of experimental plants. Additionally, USDA argued that extending utility patents to sexually reproducing plants was scientifically and legally unsound in that such plants could not be reproduced true to type or be reasonably capable of identification, as was the case with asexually reproduced plants. *See* General Revisions of the Patent Laws: Hearings on S. Res. 37 on S.2, S.1042, S. 1377, S. 1691, S. 2164, S. 2597, Before the Senate Subcomm. on Patents, Trademarks and Copyrights of the Comm. on the Judiciary, 90th Cong. 715 (1968).

Though Congress, now for the second time, had specifically rejected the patenting of sexually reproducing plants, it did understand that some protection for these plants was appropriate. Congress sought an alternative form of protection. Such a compromise emerged in the Plant Variety Protection Act. As one of the original supporters of the PVPA, Rep. Clarence J. Brown, stated:

> Today our patent and copyright laws extend themselves to cover inventions, the works of artists and writers, and the innovations resulting from scientific research. It seems only fair and reasonable to extend similar protection to those whose investment, effort, knowledge and skill result in the development of new and stronger plant varieties. *Existing law does not now provide such protection to private plant breeders and the developers of sexually reproduced plant varieties. This legislation seeks to correct the oversight of that situation.* Plant

> Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 53 (1970) (emphasis added).

Enacted in 1970 (and amended in 1994), the PVPA provides developers of new varieties of plants with patent-like rights that protect the reproduction of their varieties. Under the PVPA, a Certificate of Protection is awarded by the USDA's Plant Variety Protection Office to an owner of a variety after an examination shows that it is new, distinct from other varieties, and genetically uniform and stable through successive generations. The term of protection is twenty (20) years for most crops and twenty-five (25) years for trees, shrubs, and vines. The owner of a U.S. protected variety has exclusive rights to multiply and market the seed of that variety.[5]

In light of this new protection, and USDA's concerns over the extension of utility patent rights to sexually reproducing plants, Congress accurately recognized that they must provide exceptions to the new patent-like rights in an effort to be consistent with public policy. Accordingly, there are two exemptions to the rights granted under the PVPA. One exemption allows research to be conducted using PVPA protected varieties. This allows for the free exchange or germplasm within the research community. Specifically, the PVPA's Research Exemption states, "The use and reproduction of a protected variety for plant breeding or other

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[5] Section 2483 of the PVPA states, "Every certificate of plant variety protection shall certify that the breeder, has the right, during the term of the plant variety protection, to exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing a hybrid or different variety therefrom, to the extent provided by this Act." 7 U.S.C. § 2483.

bona fide research shall not constitute an infringement of the protection provided under this act." 7 U.S.C. § 2544.

A second exemption was created to allow farmers to save seed for re-planting. The PVPA creates a right to save seed stating that ". . . it shall not be infringement of any right hereunder for a person to save seed produced by . . . authority of the owner of the variety for seeding purposes and use such saved seed in the production of a crop for use on his farm, or for sale as provided in this section." 7 U.S.C. § 2543.

In the context of this case, the results of this legislative compromise are obvious. Congress refused to extend to the breeders of sexually reproduced plants the patent protection afforded breeders of asexually reproducing plants. Instead, Congress specifically crafted a new and distinct intellectual property regime for sexually reproducing plants. This action should be dispositive as to Congressional intent on the patenting of sexually reproducing plants. The continuing Congressional rejection of utility patents of such plants clearly demonstrates that the PTO's granting of utility patent protection on sexually reproducing plants is a paradigm example of agency ultra vires behavior. As this Court has noted, Congressional rejection of a statutory provision "strongly militates against a judgment that Congress intended a result that it expressly declined to enact." *Gulf Oil Corp. v. Copp Paving Co.*, 419 U.S. 186, 200 (1974).

In an attempt to deflect the force of Congress' clear rejection of utility patenting for sexually reproducing plants, the lower court in this case suggested that the 1952 legislative history of the Patent Act, in particular language that purports to suggest that everything "made under the sun" was patentable, somehow provided evidence that Congress had changed its collective mind and suddenly allowed sexually reproducing plants to be patented under section 101. The lower court relies on the decision in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), to support its position. The lower court's

reasoning is misguided. In *Chakrabarty*, the Court did allow the patenting of a genetically engineered microbe. However, the Court's ruling was made in the context of the Court finding that Congress had never focused directly on whether a genetically engineered bacteria was patentable subject matter under section 101. Of even more relevance to the current matter, the Court found that had Congress wanted it could have acted to exclude a genetically engineered bacteria from patenting had it enacted a separate statute to address the matter. *Chakrabarty* at 318. Thus, the breadth of section 101 that allowed the bacteria to be patented in *Chakrabarty* is derived from a failure of Congress to specifically reject an extension of such power over the bacteria.

As described *supra*, Congressional history concerning the use of section 101 on sexually reproducing plants tells a different story. Congress has explicitly rejected using section 101 to make sexually reproducing plants patentable, and it did so in 1970 long after the 1952 Patent Amendments had passed. To now claim that the 1952 Amendments somehow supersede the passage of the PVPA in 1970 defies reason. In seeking to accommodate this incoherent view of the 1952 Amendments, respondents ask this Court to erase all Congressional action subsequent to 1952. Respondent's position would render irrelevant (1) the Presidential Commission's examination of the issue between 1965-1968; (2) the Congressional rejection of amendments to the Plant Patent Act that would have extended patent rights to seeds in 1968; (3) the Congressional arguments from the plant breeding community about the need for some sort of intellectual property protection for sexually reproducing plants; and (4) the legislative compromise crafted into the PVPA. Any reasonable reading of Congressional intent cannot erase almost two decades of intense Congressional scrutiny of this very issue. Most clearly, Congress did not in any way allow the patenting of sexually reproducing plants in 1952 and specifically rejected extending section 101's reach

to include sexually reproducing plants both before 1952 and long after. As the Court itself has stated, "[f]ew principles of statutory construction are more compelling than the proposition that Congress did not intend sub silentio to enact statutory language that it has earlier discarded." *INS v. Cardozo-Fonseca*, 480 U.S. 412, 442-43 (1987). Congress has discarded using section 101 to grant patent protection for sexually reproducing plants and the Court should not sanction a federal agency's action ignoring such action.

II. THE PTO'S EXTENSION OF UTILITY PATENTS TO SEXUALLY REPRODUCING PLANTS IS ARBITRARY AND CAPRICIOUS

On October 8, 1985, in notice by Donald Quigg, the PTO announced it was putting the *Ex Parte Hibberd* decision, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985), into practice and began accepting patent applications for sexually reproducing plants. 1060 O.G. 4 (Oct. 8, 1985). The lower courts and Respondent suggest that the PTO's decision concerning *Hibberd* in some manner justified the extension of section 101 subject matter to include plants. However, the PTO's decision was never sanctioned by Congress and represents the agency's interpretation of section 101, and is directly contrary to its Congressional mandate. Therefore, the PTO's action is ultra vires, completely beyond the bounds of authority delegated to it by Congress. The PTO is a federal agency subject to constraints on its activity under the Administrative Procedure Act (APA). *Dickinson v. Zurko*, 527 U.S. 150, 154 (1999). A federal agency's administrative powers are limited to the authority delegated by Congress. *Bowen v. Georgetown Univ. Hosp.* 488 U.S. 204, 208 (1988). Accordingly, the PTO's 1985 interpretation concerning sexually reproducing plants goes beyond the Congressional authority delegated to the PTO. Congress has never delegated PTO the power to grant utility patents for sexually reproducing plants under section 101. In fact, Congress

specifically rejected such a delegation twice—once in 1930 and a second time in 1968. Given Congress' action, the PTO's interpretation cannot be seen as either consistent with the plain meaning of the Patent Act nor a reasonable interpretation of the statute. *See Chevron U.S.A., Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984). The PTO's actions ignore the clearly ascertainable legislative intent of Congress and should not be deemed lawful.

It follows, that Pioneer's utility patents are the tainted fruit of the poisoned tree. The PTO's issuance of these patents are direct product of PTO's arbitrary and capricious interpretation of the Patent Act and the scope of section 101. As such, the patent protection granted to Pioneer should not be upheld.

III. IMPACTS ON PLANT BREEDING CAUSED BY PTO'S ILLEGAL EXTENSION OF UTILITY PATENT PROTECTION.

The general result of extending utility patents to sexually reproducing plants is to give the rights' holders greater control over access and use of the protected plants and plant components. Plant utility patents allow the inventor-breeder to claim not just the plant as a whole, as is the case with asexually reproduced Plant Patents and PVPA certificates, but the inventor-breeder can claim the individual components of the variety. In addition to the components of a variety, such as a DNA sequence, gene, tissue culture, seed or specific plant part, the inventor-breeder can claim methods using the variety to make other varieties or hybrids. The inventor-breeder can also claim any hybrid varieties created in the future that result from use of its patented varieties. In rejecting the patenting of sexually reproducing plants, Congress had good reason to fear that extension of such exclusive rights would have profound effects on plant breeders and farmers.

A. Utility Patents Exacerbate Genetic Erosion And Promote Plant Uniformity

The severe limitations placed upon plant breeders by utility patent protection have enormous ramifications for the whole of agriculture. To the extent possible, plant breeders have attempted to maintain access to a wide range of genetic variability to develop healthier strains and meet changing conditions. Diversity has therefore served as a traditional tool for plant breeders to ensure the stability of American agriculture. For many years, plant breeders, scientists and others concerned about maintaining a genetically diverse agriculture have been worried about genetic erosion—the loss of genetic diversity through extinction—in the major food crops of the world. For example, current United States National Seed Storage Laboratory holdings suggest that since 1903 the U.S. has lost 94.1% of beet varieties, 96.1% of sweet corn varieties, 92.8% of lettuce varieties and 80.6% of tomato varieties.[6]

Modern agriculture is dependent upon a relatively small number of commercial crop species, some of which are dominated by a relatively small number of varieties within the species. The lack of genetic variability or diversity within these crops means that they can be highly susceptible to plant pathogens which could wipe out a significant proportion of a crop in a very short time. Without a free flow of research information and germplasm, plant breeding research on developing genetically diverse and unique commercial varieties will be delayed and often permanently impeded.

This point was of particular interest to the agricultural community at the time the PVPA was passed. In 1970, a fungus attacked the genetically similar U.S. Corn crop cutting yields by fifteen percent and costing farmers hundreds of

[6] *See* Cary Fowler, *Unnatural Selection* 239-240 (Gordon and Breach eds.) (1994) (citing to Table 12).

million of dollars. The Corn Blight of 1970 is a reminder that the policies passed by Congress to ensure broad access to germplasm through the plant breeders' exemption and seed savers' exemption serves as an insurance policy to avoid similar events in the future.[7] Indeed, in discussing the extension of patent protection to sexually reproducing plants, USDA opposed the extension of patent rights in part because it would diminish the access to and number of plants available to plant breeders for research.

Human agriculture involves the screening and manipulation of plants' genetic components. The larger the pool of genetic resources, the greater the options a plant breeder has to meet changing conditions. The PTO's unilateral move to extend patent rights to sexually reproducing plants has increasingly tied up germplasm in a miasma of legal arrangements and has begun to erode the genetic diversity of our foods. In the end, as new varieties are subject to patent protection, plant breeders have lost valuable genetic characteristics and raw materials with which to work.

Prior to the utility patenting of seeds, public plant breeding created a range of agricultural cultivars appropriate to a wide range of agroecological zones. However, as patent protection becomes pivotal to all plant breeding it tends to focus new plant breeding solely in commodity areas in which the most profit can be made. This narrow research focus serves to further erode the United States' genetic diversity.

[7] In supporting the passage of the PVPA, one commenter noted, "American agriculture needs an unending succession of new crop varieties because the hazards to crop production are constantly changing . . . . Therefore, the need for new varieties is never satisfied." Plant Variety Protection: Hearings on H.R. 13424, H.R. 13631, H.R. 13901, H.R. 14332, and H.R. 15226, Before the House Subcomm. on Departmental Operations of the Comm. on Agriculture, 91st Cong. 36 (1970) (Testimony of Dr. Walter O. Scott, Illinois Crop Improvement Association).

Additionally, the legal requirements of utility patents demand commercially-oriented uniformity which is undesireable for the future of American agriculture, since it may well increase susceptibility of plants to pests and diseases, as in the case with the 1970 Corn Blight. In fact, Congress specifically rejected extending utility patents to sexually reproducing plants because of the difficulty in providing written descriptions of uniform breeding results.

Finally, the rapid trend toward seeking utility patent protection in plants will increasingly result in researchers ignoring the remaining germplasm diversity. Patenting plant varieties hampers innovation as breeders are increasingly unable to use a patented variety for any commercial or research purpose without authorization and a licensing agreement from the patent holder. As the right of plant breeders and companies to exclude others from use of their research expands, all genetic resources are increasingly underutilized. This phenomenon has been dubbed the "Tragedy of the Anticommons." *See* Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 Harvard L. Rev. 621 (1998); *See also* Heller and Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Science 698 (1998). In application to the issue at hand, a genetic resource will be prone to under use (i.e a lack of a robust plant breeding sector) in a tragedy of the anticommons when multiple owners, such as Pioneer, each have a right to exclude others from the use of the scarce genetic resource and no one has an effective privilege of use. While the utility patent right can be licensed to researchers, often owners of these patent rights will refuse to grant licenses for strategic reasons such as preventing a competitor from "inventing around" the patent holder's market position. The problem becomes compounded in areas of rapid and complex research, such as plant breeding, where research may need to navigate among many licenses on numerous utility patents and any one patent

owner could hold up research by denying the license. In the case of plant resources, as patent protection increases around a rapidly disappearing germplasm base, the ability of plant breeders to utilize this resource for improving plant varieties becomes increasingly limited. Patents may slow down invention or alternatively, as borne out in the expanding litigation between numerous companies over patent infringement, create enormously complex cross-licensing agreements whereby a plant variety might be covered by a dozen different patents.

In 1970, Congress wisely came to a compromise in order to avoid the dire results of extending utility patent protection to sexually reproducing plants. This compromise created a research exemption from the new intellectual property protection granted in the PVPA. It specifically sought to allow plant breeding to take place relatively unencumbered and to prevent exclusions from use of germplasm in research to improve American agriculture. In 1985, the PTO, by granting utility patents on sexually reproducing plants, ignored the PVPA and clear Congressional intent and created a legal situation in which our agricultural research is severely impeded, bringing about the very consequences feared by Congress. The Court should not sanction this *ultra vires* agency action and its resulting harm to America's agricultural future and the nation's food security.

B. Utility Patents Will Limit The Exchange Of Information And Germplasm

The PTO's extension of utility patent protection to sexually reproducing plants has led to restrictions in the exchange of scientific information and genetic material, particularly from private companies to public plant breeders. If a plant breeder intends to seek utility patent protection of a new variety under section 101, it is unlikely that the new variety, its characteristics, genetic make-up or breeding technique will be

discussed publicly at least until patent protection has been obtained. It is further unlikely that a plant breeder who is seeking such protection will enter the new variety into government regional trials until after the application is made, nor will sample seeds be sent to many colleagues.

These results are far from hypothetical. Recently, a survey of public plant breeders found "that public sector plant breeding has been negatively impacted by the private sector's development and control of proprietary genetic stocks. Nearly 50% of public plant breeders have had difficulties obtaining genetic stocks from companies; the most shocking result is that almost 1/4 of breeders responded that graduate student training has been harmed."[8]

An example of how the extension of patenting to sexually reproduced plants has reduced the free flow of germplasm among plant breeders is exemplified by the development of Seminis Vegetable Seeds, Inc.'s Sharp Shooter lettuce. In 1999, Seminis was issued U.S. Patent No. 5,973,232 claiming:

> (1) Lactuca sativa (lettuce) seed designated as Sharp Shooter having ATCC Accession No. 209461;
>
> (2) A Lactuca sativa plant produced by growing the seed in claim 1;
>
> (3) A Lactuca sativa plant having all the physiological and morphological characteristics of the Lactuca sativa plant of claim 2; and
>
> (4) A F_1 hybrid Lactuca sativa plant having Sharp Shooter as a parent, wherein Sharp Shooter is grown from seed having ATCC Accession No. 209461. U.S. Patent No. 5,973,232 (issued Oct. 26, 1999).

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[8] Steven C. Price, *Public and private plant breeding*, 17 Nature Biotechnology 938 (1999).

The description of the development of Sharp Shooter and its claims exemplify how the PTO's extension of utility patents directly conflicts with the actions and intent of Congress in passing the PVPA. Seminis developed Sharp Shooter with the use of three different lettuce varieties as parents. These parents consisted of a publicly released cultivar named Montello and two lettuce varieties subject to PVPA protection by the Harris Moran Seed Company, El Toro (PVP No. 8200027, issued Apr. 28, 1983) and Alpha (PVP No. 9000055, issued Dec. 31, 1991). As a result of the PVPA's breeder exemption, Seminis was legally allowed, as intended by Congress, to use publicly released varieties and Harris Moran's varieties to breed and improve upon lettuce varieties to, in this case, breed for increased resistance to downy mildew pathogens and corky root rot pathogens. The irony of such a situation should not be lost on the Court. It was the very existence of the PVPA process that allowed Seminis access to germplasm that led to the development of its improved variety of lettuce. However, once Seminis developed this variety it was allowed to halt the future free flow of this improved germplasm by receiving a utility patent on Sharp Shooter lettuce and derived hybrids. *See Id.* (discussing claim 4). It should be clear that Congress did not create a plant breeders' exemption in the PVPA to allow for companies to create an improved variety through the open flow of germplasm and then sanction that such a free flow of information be cut off once a company decided that a new variety with desirable traits should be patented.

Amici are aware of a number of public plant breeders who have personal experience in having their ability to freely exchange research results dramatically curtailed by the PTO's arbitrary and capricious extension of utility patents to sexually reproducing plants. As many public plant breeders in universities navigate the intellectual property ramifications of public plant breeding research in crops, these breeders are often prevented from releasing information and germplasm to

colleagues around the world. The ramifications from such limitations not only affect the ability to distribute material to other plant breeders, they also limit the access to germplasm by other plant breeders interested in improving plant varieties. The end result is exactly what Congress feared, that utility patent protection over sexually reproducing plants will detrimentally limit public plant breeding.

The harm caused to public plant breeding by the extension of utility patent rights reaches beyond the research community. For years, many farmers have funded public plant research through national and state mandatory assessments of a percentage of the net market price of a crop, known as "check offs".[9] These check off funds have been used to leverage additional state and federal funds to further support public plant breeding research under agreements between land grant universities and the Agricultural Research Service of the USDA. As this public research becomes increasingly impeded by utility patent protection, the farm community fails to receive the plant breeding benefits it has funded.

These impediments and impacts caused by the utility patenting of sexually reproducing plants are not unique to public plant breeders. *Amici* are aware of private plant breeders that have had their ability to develop new and improved plant varieties halted by competitors' patent rights. In particular, one such breeder seeks to use the Gold Rush variety of pumpkin for breeding to develop new traits and new varieties of pumpkins. However, the Gold Rush variety is subject to a utility patent claiming both the variety and first

[9] For example, the Soybean Promotion, Research and Consumer Information Act, 7 U.S.C. §§ 6301-6311, authorizes a national soybean promotion, research and consumer information program funded by a mandatory assessment "check off" of .5% of the net market price of soybeans. The program, administered by the United Soybean Board, *inter alia*, leverages checkoff dollars with government research funding to promote research on soybean varieties.

generation hybrids developed with Gold Rush as a parent line. U.S. Patent No. 5,811,642 (issued Sept. 22, 1998). Rupp Seeds originally developed the Gold Rush pumpkin by selecting the Connecticut Field variety of pumpkin and crossing it with a gourd of unknown variety and then further selecting down the resulting variety. Connecticut Field, considered the traditionally bred American pumpkin, has been grown for decades without PVPA or other intellectual property controls. In patenting the resulting plants and improved traits of Connecticut Field Rupp has foreclosed additional research on improving this new cultivar. Indeed, the patent holder has done this with other pumpkins by obtaining a utility patent on Pumpkin Variety RS 1090 that was developed over the course of 35 years by allowing bees to randomly cross pollinate Connecticut Field pumpkins with other PVPA protected varieties such as the Howden pumpkin (PVP No. 7200106, issued May 31, 1977) and the Pankow's Field pumpkin (PVP No. 8000128, filed May 23, 1980). *See* U.S. Patent No. 5,457,278 (issued Oct. 10, 1995).

Similar to the situation with Seminis' Sharp Shooter lettuce, a seed company has been able to utilize and access germplasm by taking advantage of the PVPA's plant breeder exemption, then patent a new variety and exclude future research on their improvement. Because utility patent rights foreclose the Congressionally sanctioned PVPA breeders' exemption, the Gold Rush variety's germplasm remains inaccessible to other plant breeders unless they pay significant royalties and enter into licensing agreements with the patent holder. These results exemplify why Congress has never extended patent rights to sexually reproducing plants. Such an intellectual property regime creates a severe financial disincentive for both public and private plant breeders seeking access to germplasm and new varieties for which they will use to expand existing research. It also is a serious impediment to the entry of new start-up companies in the plant breeding industry.

C. Utility Patents Have Promoted Significant Consolidation Of The Seed Industry

Intellectual property rights restrict the number of suppliers in a market in an attempt to provide incentives for innovation. Contrary to the assertion of the Respondent, there is no evidence that extension of utility patents to plants has actually stimulated invention. Rather, utility patents create incentive to acquire control of basic materials, limit access to them, and seek further patent protection as a means of continuing control. Since the expansion of utility patent protection to sexually reproducing plants, the number of independent seed companies has declined significantly. This result has occurred as the increased intellectual property rights of utility patents on sexually reproducing plants restricts market entry and results in an increasingly concentrated seed market. The extension of utility patenting to plants has in fact brought a large reduction in the number of small research companies and small family-owned seed businesses. The result has been an increase in market share for the large seed companies and an increasing involvement by large chemical companies looking for ways to distribute their other products such as herbicides.

Consolidation in the seed industry is happening at a phenomenal rate. Large companies are purchasing smaller seed companies at an exponential rate as they attempt to dominate access to germplasm resources. Between 1995 and 1998, approximately 68 seed companies either were acquired by, or entered into joint ventures with, six large, multinational corporations (Monsanto, Aventis, Dow, AstraZeneca, Novartis and DuPont).[10] Some of these acquisitions and mergers have involved companies that had previously

[10] John L. King, *Concentration and Technology in Agricultural Input Industries*, USDA, Economic Research Service, 763 Agriculture Information Bulletin 6, *available at* http://www.ers.usda.gov/publications/aib763/ (Mar. 2001) [hereinafter "King"].

undertaken acquisitions of their own. And, in many cases, smaller firms have been bought outright to acquire their plant variety-based intellectual property. For example, Monsanto has purchased Holden Foundation Seeds for $1 billion, the remaining sixty percent of DeKalb Genetics that it did not already own, Asgrow (soybean and corn), Agracetus (of W.R. Grace & Co.) and Cargill's international seed division. *See* Debra L. Blair, *Intellectual Property Protection and its Impact on the U.S. Seed Industry*, 4 Drake J. Agric. L 297 (1999) [hereinafter "Blair"]. Over just the last five years, Monsanto has acquired, merged with or obtained an interest in DeKalb (1998), Calgene (1997), Asgrow (1996), First Line Seeds Limited (1998), Holden's Foundation Seed (1997), Plant Breeding International (1999), Cargill's International seed business (1998), Agracetus (1996), and Ecogen (1996) among others. *Higginbotham v. Monsanto Co.*, Docket No. 99-CV-03337 (CKK), Am. Class Action Compl. (filed Jan. 31, 2000).

The change of identity in the Respondent in this case reflects the ongoing consolidation in the seed industry fueled, at least in part, by extending utility patent rights. In 1999, DuPont paid $7.7 billion to acquire the rest of the original plaintiff Pioneer Hi-Bred International that it did not already own. DuPont is now the world's largest seed company with revenues in excess of $1.8 Billion.[11]

As yet another example, Novartis, the third largest seed company, was created through the recent merger of Ciba-Geigy and Sandoz. It now owns Northrup King, Rogers Seed Co., Funk Seeds International and others. Most recently, Novartis has entered into a merger with AstraZeneca to form Syngenta. The evidence that these mergers and acquisitions

[11] Rural Advancement Foundation International, *The Seed Giants-Who Owns Whom?* 4, *available at* http://www.rafi.org/web/allpub-display.shtml?pfl=others/list-all.param (Dec. 2000).

have been, at least in part, stimulated by the PTO's extension of utility patents protection is overwhelming. The largest patent holders are the most active in purchasing and collaborating with each other to gain market power and position and control over genetic resources. As of 1999, Monsanto (including its acquisitions of DeKalb, Cargill, Asgrow and Holden) controlled 60% of all utility soybean patents and almost 30% of all utility corn patents. *See* Blair at 322 (citing to Table 2).

The consolidation of the industry has significant impacts on agriculture. Acquisition of smaller plant-breeding companies has given larger corporations quick access to stock cultivars and new plant varieties in development. Ultimately, consolidation of the industry serves, *inter alia*, to further lock up the germplasm resources of small seed companies that have been bought out. For example, the Respondent Pioneer began securing patents for its hybrids in the late 1980's. It has announced it will seek utility patents for all of its corn hybrids.[12] Now combined with the market share of its parent, Respondent can dictate who has access to what germplasm and to what end. As a result of industry-wide mergers and acquisitions in the 1990's, the four largest firms now have significant concentrated power over the U.S. commercial seed industry controlling 67% of the U.S. corn seed market, 49% of the soybean seed market and 87% of the cotton seed market.[13] Such market control allows these dominant firms to raise the seed prices it charges farmers without fear of being undercut by competitors.

Plant breeders and farmers now confront the impediment of patent protection at every turn. Seed patents increasingly create a scenario where the cost of royalties or denial of

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[12] Anne Fitzgerald, *Pioneer to Patent Seed Corn Hybrids*, Des Moines Reg, April 9, 1996, at S8.

[13] King at 7 (citing to Figure 3).

access to germplasm altogether becomes a major, if not overriding, factor in the decisions of plant breeders on whether to select patented plants to create new varieties. Combined with the genetic uniformity required by a utility patent regime and the inability of farmers to save seeds, this serves to further accelerate the rate of genetic erosion.

IV. IMPACTS ON FARMERS AND CONSUMERS CAUSED BY PTO'S ILLEGAL EXTENSION OF UTILITY PATENT PROTECTION.

The PTO's extension of utility patents has also had a tremendous impact on farmers across the country. The policies adopted by PTO have taken away the farmer's traditional and Congressionally recognized right to save seed, resulting in increased seed prices and have created a way in which seed companies can dictate the legal rights of farmers through increasingly coercive seed purchasing agreements. Moreover, these agreements can even mandate the conditions of post-harvest use and sale of the patented crop.

A. Impacts On Seed Saving

At present, farmers generally have three options for acquiring seeds: (1) to obtain quality seed each season from public institutes, seed companies or dealers; (2) to save part of their own harvest as seed; and (3) to trade part of their harvest for seed from grain dealers. In passing the PVPA, Congress specifically provided protection for farmers' right to save seed through the PVPA's seed savers provisions. *See Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995) (upholding a farmer's right to save seed under the PVPA). Should the Court uphold Pioneer's claim that the PTO has validly extended utility patent protection to sexually reproducing plants, farmers will have lost this right specifically guaranteed by an act of Congress.

1. *Patents have taken away a centuries-old traditional right to save seed*

Plant varieties are distinct from other patentable materials because they reproduce. Moreover, as the examples of Sharp Shooter lettuce and Gold Rush pumpkin described *supra* indicate, no potential utility plant patent holder has ever started from scratch. Most plant breeders build upon the accumulated innovation of farmers and plant breeders from centuries ago. Farmers played a major role in expanding the germplasm base of modern agriculture through experimentation and creation of thousands of new plant varieties. These varieties built American agriculture and helped to prevent genetic erosion. Crucial to this history was the ability to save seed and the exchange of this seed among farmers and breeders, which ensured that a diverse genetic pool was available for all to improve. If Pioneer's utility patents are upheld, this critical legacy will be lost.

2. *Seed Saving Controls Prices*

Prices for seed have risen dramatically since 1985 and the extension of utility patents to sexually reproducing plants have undoubtedly contributed to this increase.[14] Prior to the PTO's extension of utility patent protection, companies had access to new cultivars and could produce and market a new variety as long as they could cover their cost of production and marketing. Because a company was often using freely accessible germplasm in developing new cultivars, the cost of

[14] For example, the cost of corn seed has increased from $18.48 dollars per planted acre in 1985 to $30.29 dollars per planted acre in 1999. USDA, Economic Research Service, *Corn costs and returns data, available at* htpp://www.ers.usda.gov/Data/CostsAndReturns/car/Corn3.htm (last updated Mar. 27, 2001). Similarly, the cost of soybean seed has increased from $12.92 dollars per planted acre in 1985 to $19.25 dollars per planted acre in 1999. USDA, Economic Research Service, *Soybean costs and returns data, available at* htpp://www.ers.usda.gov/Data/CostsAndReturns/car/Soybean3.htm.(last updated Mar. 27, 2001).

developing a new variety was much lower. Additionally, the mere act of performing plant research did not render a plant breeder vulnerable to a patent infringement suit. However, utility patents provide companies with greater control over the price and output of their products. Patents and "technology user" agreements restrict access to new cultivars by giving the producer sole right to produce, market or license their sale. Since the company developing a new cultivar has an absolute monopoly on that cultivar, the price will not be driven down by competition from new cultivars derived from the patented variety or by farmers saving seeds. Thus, the company can charge the maximum price governed only by the value the new plant variety represents to the buyer.

Prior to 1985, there were at least two checks on this ability to increase seed prices; (1) seed saving and (2) plant breeder rights. As allowed under the PVPA, seed saving acts as a check on seed prices as efforts by seed companies to raise prices are likely to be met by an increase in saved seed. This was a particularly viable option for farmers in many seed species such as cotton and cereals. Such action often produced a braking effect on prices for fresh seeds. Additionally, the access to germplasm allowed under the PVPA helps reduce the cost of plant breeding and creation of new varieties. These lower research and development costs are reflected in the market by lower seed prices. These key economic considerations were recognized by Congress throughout its deliberation and action preventing the utility patenting of sexually reproducing plants. Therefore, the PTO should not be allowed to fundamentally alter the dynamics of the seed market through an arbitrary and capricious expansion of the subject matter covered under section 101 of the Patent Act.

3. *Utility Patent Protection Has Created Defendant Farmers*

The extension of utility patent protection threatens to fundamentally alter the pursuit of farming. Increasingly, farmers have become the latest casualty in an ever increasing high stakes game of prosecuting patent infringement and other intellectual property violations. In the U.S., the number of intellectual property lawsuits has become immense. In 1999, there were 8,200 cases alone.[15] The burgeoning number of intellectual property cases is increasingly being brought to bear on the U.S. farmer. For example, one company, Monsanto, has filed more than 475 lawsuits against farmers for, *inter alia*, patent infringement and violation of "technology user" agreements for saving seed or selling or trading seed to fellow farmers. *See Higginbotham v. Monsanto Co.*, Docket No. 99-CV-03337 (CKK) Am. Class Action Compl. (filed Jan. 31, 2000).

The patenting of sexually reproducing plants may also be fundamentally changing the face of patent infringement claims. Many patented seed varieties are from open pollinated crops whose pollen can infect neighboring farmers planted with unpatented varieties. An example such cross pollination has occurred with the StarLink™ genetically engineered corn variety patented by the company Aventis. *See* U.S. Patent No. 5,861,543 (issued Jan. 19, 1999). StarLink™, which does not have regulatory approval for human consumption, has contaminated corn fields across the country that were not planted with the variety and caused significant economic harm to many farmers.[16] The ultimate

[15] Rural Advancement Foundation International, *In Search of Higher Ground* 9, *available at* http://www.rafi.org/web/allpub-display.-shtml?pfl=ocp/list-all.param (September 2000).

[16] *See generally*, Brian O'Reilly, *Reaping A Biotech Blunder*, Fortune, Feb. 19, 2001.

result of StarLink™-like cross pollination can be that a farmer who attempts to save his or her seed may be become an involuntary infringer of a patent if the genetic content of his seed has changed as result of this biological pollution. In 1930, Congress recognized such vagaries of cross pollination in sexually reproducing plants. *See* S. Rep. No. 71-315, at 7 (1930). In this regard, Congress was prescient in its intent not to extend utility patent rights to seeds.

If farmers are not being hauled off their fields and into court, they are spending valuable time reviewing the myriad of licensing and "technology user" agreements now necessitated by seed companies selling their patented seed. Another result of expanding the utility patent regime to seeds is the growing use of purchase agreements associated with a farmer purchasing a patented seed variety. These contracts enable companies to force binding arbitration as a sole method of settling disputes. The contracts also enable the patent holder to use breach of contract claims, as well as claims of infringement, in local courts to enforce their ownership rights. Not surprisingly, a significant number of Monsanto's infringement prosecution cases are in the Eastern District of Missouri, home of the company. This is the result of seed agreements which contain a right of venue clause allowing the patent holder to force legal disputes to be settled in courts that may be more favorable to the patent holder or make defense against infringement charges more costly to the farmer. These agreements also require acceptance of limited warranties that significantly narrow the liability of the patent holder or seed seller for any and all losses, injuries or damages resulting from use or handling of the seed. Thus, the PTO's extension of utility patents has been piggybacked with the shifting of virtually all liability for misuse onto the farmer-purchaser. Labels on seed bags inform purchasers that they are entering into legal agreements with seed companies, which typically provide that the purchaser abide by specific use restrictions on the seed. In the case at hand, Pioneer's

labels prohibit crop saving and state "use . . . for . . . development of a hybrid or different variety of seed is strictly prohibited." Defs.' Pet. Reh'g En Banc at 12.

Congress never envisioned turning the American farmer into a "poster child" for patent infringement. Instead, it acted to strike a balance with the PVPA by allowing limited intellectual property rights to seed producers in exchange for exemptions that allow farmers and plant breeders to remain more than corporate "serfs" renting the limited available germplasm from a handful of companies.

CONCLUSION

For the reasons set forth above and those presented in the Petitioner's Brief, the *Amici* urge this Court to reverse the decision of the Federal Circuit in this case.

Respectfully Submitted,

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J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.) FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, AND TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF FOR *AMICUS CURIAE* AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF RESPONDENT SUPPORTING AFFIRMANCE

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INTEREST OF THE *AMICUS*

The American Intellectual Property Law Association is a national association of more than 12,000 members whose interests lie in patent, copyright, trademark, trade secret and other areas of intellectual property law. The AIPLA's members include attorneys in private practice and attorneys employed by corporations, universities, and government, who represent both owners and users of intellectual property. Unlike many other areas of practice in which separate and distinct plaintiffs' and defendants' bars exist, most, if not all, intellectual property attorneys represent both intellectual property owners and alleged infringers.

The AIPLA has no stake in either of the parties to this litigation or the result of this case, other than its interest in seeking correct and consistent interpretation of the law affecting intellectual property.[1]

[1] Pursuant to Rule 37.3, the parties have consented to the filing of this amicus brief. Their letters of consent have been filed with the Clerk of the Court. None of the parties to this case or their counsel have contributed either substantively or monetarily to the preparation of this brief. Specifically, only the *amicus*, its members and its counsel have made a monetary contribution to the preparation or submission of this brief.

SUMMARY OF ARGUMENT

The general issue of this appeal is whether sexually reproducing plants, more specifically hybrid and inbred corn plants, are excluded from the scope of 35 U.S.C. § 101 and, accordingly, are not permissible subject matter for a utility patent.

As this Court made clear in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) ("*Chakrabarty*"), and the Federal Circuit reaffirmed in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999), section 101 is compendious and inclusive and admits any subject matter that is produced by man. Section 101 contains no limiting language that would exclude plants from its scope.

Nor can either the Plant Patent Act of 1930 (35 U.S.C. § 161 et seq.) ("PPA") or the Plant Variety Protection Act of 1970 (7 U.S.C. § 2321 et seq.) ("PVPA") reasonably be read as a *post hoc* limiting amendment of section 101. Instead, each was intended to facilitate, not restrict, the availability of protection for plants. Each provided a limited form of protection based on relaxed requirements for disclosure.

The drafters of the PPA and PVPA were motivated by a belief that inventors of plants could not meet the stringent disclosure requirements of a utility patent, or that there was some overriding "product of nature" doctrine that operated to foreclose utility patent protection for any living matter. However, subsequent history and the ongoing development of technology have shown that those rationale no longer apply. Inventors of plants are now able to provide the enabling disclosure and claims required by 35 U.S.C. § 112. *See Pioneer Hi-Bred International, Inc. v. J.E.M. Ag Supply et al.*, 200 F.3d 1374, 1375 (Fed. Cir. 2000) ("*Pioneer*") ("precision of description no longer an insurmountable obstacle"). Authoritative court decisions have explained that inventions made or altered by man are patentable, even if they are living

matter. *See, e.g., Chakrabarty,* and *In re Bergy et al.*, 596 F.2d 952 (CCPA 1979) *aff'd sub. nom., Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (*"Bergy"*) (genetically engineered microorganisms and cultured microorganisms are patentable subject matter).

As a matter of straightforward statutory construction, the PPA and PVPA are inclusive adjuncts to utility patent protection, not exclusive substitutes for it. Even if, by enacting the PPA and PVPA, Congress intended to provide a form of protection for plants that it believed at the time was not provided by section 101, this Court's *Chakrabarty* decision interpreted section 101 more broadly, as encompassing all products of human ingenuity.

Policy considerations lead to the same conclusion. Allowing inventors of plants to obtain a limited period of exclusivity in return for full disclosure is fully consonant with the overriding purpose of the patent laws. The public benefits when plant inventors provide the full disclosure required for a utility patent, in contrast to the limited disclosure provided by plant patents or PVPA certificates. No policy reason justifies discriminating against, and denying utility patent protection to, an inventor who can meet the disclosure requirements of 35 U.S.C. § 112 merely because the invention is embodied in a plant. Rather, in recent years, utility patent protection for plants has assisted progress in many areas of agricultural science.

ARGUMENT

I. Extending the Protection of Utility Patents to Plants Does Not Contradict the PPA or PVPA.

A. The Barriers that Gave Rise to Legislative History Suggesting that the PVPA Was the Sole Route to Protect Sexually Reproducing Plants Had Vanished by the Time of *Hibberd*.

The parties do not dispute that both the PPA and the PVPA were enacted due to the difficulties encountered by plant breeders attempting to meet the written description requirement of 35 U.S.C. § 112(1) and to overcome the doctrine that "products of nature" are not patentable subject matter under 35 U.S.C. § 101. *See Chakrabarty*, 447 U.S. at 311-12, *Imazio Nursery Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1563 (Fed. Cir. 1995), *cert. denied*, 518 U.S. 1018 (1996), *Bergy*, 596 F.2d at 982-84. However, while Petitioner Farm Advantage argues here that the legislative history of these two acts evidences that Congress intended to exclude plants from the ambit of section 101, a better view is that the acts were intended to complement section 101 protection, not to balkanize it by removing subject matter piecemeal from its scope.[2] Today, the scope of subject matter relating to plants that can meet the requirements of section 112 far exceeds single plant varieties, as defined by either the PPA or the PVPA.

In contrast, the protection afforded by plant patents and PVPA certificates extends only to plant "varieties."[3] This

[2] In *Bergy*, the court reasoned that living cells are compositions of matter. *Bergy* 596 F.2d at 985 ("When we examine 'living' cells, it appears that they too are chemical compounds assembled in infinite complexity with an added facility for replication."). It follows, without question, that multicellular organisms, such as plants and animals, fit this definition. Were Farm Advantage to prevail here, plants would not be patentable under section 101, but animals would continue to be patentable. See, for example, Leder et al., U.S. Pat. No. 4,736,866 ("Harvard mouse patent").

[3] In *Imazio Nursery Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567 (Fed. Cir. 1995), the court quoted the definition of "variety" given in the Plant Variety Protection Act of 1970 (PVPA) at 7 U.S.C. § 2401 (a)(9)(1994):

> The term "variety" means a plant grouping within a single botanical taxon of the lowest known rank, that, without regard to whether the conditions for plant variety protection are fully

limited protection would not encompass the hybrid corn plants and seed covered by Pioneer's patents.[4] And, while that protection may have met the need to protect new varieties invented or discovered through the 1970s, by the early 1990s agricultural biotechnologists could transform major field crops with genes preselected or mutated to add desired characteristics. After being introduced into a single fertile plant by direct gene transfer or tissue culture techniques, the gene could be tracked by increasingly sophisticated analytical techniques as it was moved throughout the target species by conventional breeding or propagation techniques. Once one plant could be transformed, other plants might theoretically benefit from the new gene. *See, e.g.*, J. D. Watson et al., *Recombinant DNA*, Scientific American Books (2d ed. 1992) at 273-90 and 471-81. The ability of plant scientists to alter and improve plants, therefore, had extended far beyond the creation of new varieties by conventional sexual cross breeding or asexual propagation. The claimed subject matter in question in *Hibberd* was not a "variety" of corn. Rather, some of the claims were directed to all corn, inbred or hybrid, that contained a gene altered so that the seed was high in the amino acid tryptophan. *See Hibberd*, at 227 USPQ at 463, claim 249.

> met, can be defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, distinguished from any other plant grouping by the expression of at least one characteristic and considered as a unit with regard to the suitability of the plant grouping for being propagated unchanged. A variety may be [propagated] by seed, transplants, plant, tubers, tissue culture plantlets and other matter.

Nurseries sell varieties of vegetables and flowers, such as varieties of tomatoes or tulips, to consumers.

[4] Hybrid corn plants are not "varieties" since they lack the ability to be propagated unchanged. *See* Petitioner's Brief on Pet. for Writ of Cert. at pages 4-5; 7 U.S.C. § 2402.

Also, by 1985, the two factors thought to prevent living organisms from being patentable subject matter, the "product of nature" doctrine and the inability adequately to describe the plant in writing, had vanished in the wake of both judicial decisions and progress in biochemical analysis. In fact, there were no rejections of the claims before the Board in *Hibberd* based on either the product of nature doctrine or the written description requirement of section 112. The claimed genetically engineered corn plants were found to be a type of subject matter that clearly fell within section 101 and that met all the other requirements of patentability. As summarized by the Court of Appeals for the Federal Circuit in its decision in this case:

> Now, however, mankind is learning how to modify plants in ways unknown to nature. In addition, precision of description is no longer an insurmountable obstacle, due to both rules authorizing the deposit of new species in publicly available depositories, and advances in botanical understanding and analysis.

Pioneer, 200 F.3d at 1376.

B. Utility Patents Are Complementary to Plant Patents or PVPA Protection.

Section 101 is not fatally inconsistent with the Plant Patent Act or PVPA according to the applicable legal tests. Specifically, if two statutes "are upon the same subject, the rule is to give effect to both if possible. . . . There must be a positive repugnancy between the provisions of the new law, and those of the old; and even then the old law is repealed by implication only *pro tanto* to the extent of the repugnancy." *United States v. Borden*, 308 U.S. 189 (1939). Contrary to the interpretation urged by Petitioner Farm Advantage, this

Court in *Food and Drug Administration v. Brown & Williamson Tobacco Co.*, 529 U.S. 120 (2000), did not find "repugnancy" between acts of Congress regulating tobacco and the Federal Food, Drug and Cosmetic Act ("FDCA"). Rather, this Court concluded that, facially, the FDCA could not be read logically to encompass the regulation of tobacco. *See* 529 U.S. at 142 ("Considering the FDCA as a whole, it is clear that Congress intended to exclude tobacco products from the FDA's jurisdiction."). Thus, rather than removing tobacco from the ambit of the FDCA, this Court held that the later passage of acts regulating tobacco simply "ratified . . . the FDA's plain and resolute position that the FDCA gives the agency no authority to regulate tobacco products as customarily marketed." 529 U.S. at 159.

In contrast, the breadth of the language of section 101 was recently reaffirmed by the Federal Circuit in *Pioneer*, 200 F.3d at 1376 ("the policy underlying the patent system fosters its application to all areas of technology-based commerce"). This holding is entirely consistent with *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), in which the Federal Circuit made clear:

> The plain and unambiguous meaning of § 101 is that any invention falling within one of the four stated categories of statutory subject matter may be patented, provided it meets the other requirements for patentability set forth in Title 35, i.e., those found in §§ 102, 103, and 112, ¶ 2.

Therefore, far from being "repugnant" to the purposes of the PPA and PVPA, the issuance of utility patent protection for such potentially important inventions as improved plants should be seen as an appropriate application of the patent statute to encourage further advances in a technology that has already far surpassed the limited boundaries of protection afforded by the PPA and PVPA.

C. The PVPA Is Not "Specific" for Sexually Reproducing Plants.

1. Plants can be propagated both sexually and asexually.

The crux of Petitioner Farm Advantage's argument is that the PVPA is the sole means of protection that Congress intended to provide for sexually reproducing plants. The expansive *Chakrabarty* holding was tempered by the language that utility patent protection would not be available for "organisms produced by genetic engineering" if Congress passed a statute specific to this particular type of invention. *See* 447 U.S. at 318. Even extrapolating this holding from microorganisms to sexually reproducing plants, however, the PVPA act lacks the specificity alleged by Farm Advantage.

While a plant variety capable of sexual reproduction is protectable by PVPA certificate, it is also protectable by a plant patent, so long as the plant variety can also be asexually reproduced. These two modes of propagation were never exclusive; one was simply faster or more convenient for the plant breeder for a given species.[5]

If Farm Advantage chooses to argue that the PVPA was intended to be the exclusive means of protection for plants that are *solely* capable of sexual reproduction, the Court is reminded that many species of plant, including corn, are now capable of being cloned – i.e., reproduced asexually from tissue cultures such as those claimed by Hibberd et al. As noted by the PTO Examiner in *Hibberd*, the claimed tissue cultures of corn were "asexually propagating material."

[5] For example, while apple trees are often propagated asexually by grafting or by cuttings, they can be grown from seed as well. *See, e.g.*, Luby et al., U.S. Plant Pat. No. 7,197 (apple tree variety produced by sexual cross, then asexually reproduced). Turfgrass is propagated by seed, but is also propagatable asexually. *See, e.g.*, Kaerwer, U.S. Plant Pat. No. 4,465 (bluegrass plant asexually or vegetatively propagated).

Hibberd, 227 USPQ at 447. The PVPA explicitly recognizes this dichotomy by prohibiting infringing acts "even in instances in which the variety is multiplied other than sexually. . . ." 7 U.S.C. § 2541. Thus, whether or not it was ever intended by Congress, the exclusivity of subject matter for the PVPA does not in fact exist.

To hold that the PVPA is the only protection available for sexually reproduced plants would also contradict the holding in *Chakrabarty* repudiating the position that "unanticipated inventions are without protection [in patent law]." 447 U.S. at 317. As discussed above, plant patents and PVPA certificates provide protection only for the discoverer or inventor of a new plant "variety," whereas agricultural biotechnology has provided methods to transform entire species, families and even genera of plants. The ability of the patent system effectively to encompass and serve cutting-edge plant science and biotechnology should not be destroyed.

II. The Useful Art of Agriculture Has Been Advanced by the Availability of Multiple Modes of Protection.

A. Utility Patents for Plants Provide a Greater Benefit to the Public than Plant Patents or PVPA.

To support its argument that there are "irreconcilable conflicts [between 35 U.S.C. and] the more specific PVP act," Petitioner Farm Advantage extensively has presented some of the many differences between the scope of protection of PVPA certificates and utility patents for plants.[6] However, the manifest differences between the terms of the two acts also include the fact that the public receives much more from the disclosure of a utility patent on a plant than it does from a PVPA certificate. Therefore, the "conflicts" are actually an

[6] *See, e.g.*, Brief for Petitioners at pages 22-24.

expression of the balance between the inventor's right to exclude and the public's right to full possession of the invention.

Even if the subject matter that is dedicated to the public upon expiration is facially identical (e.g., a plant variety), the amount of technical information that can be employed by the public upon expiration of a utility patent is much greater than upon expiration of a PVPA certificate. This is because a utility patent specification must fully enable the practice of the invention by the interested worker, and must contain an adequate written description of the invention. *See* 35 U.S.C. § 112, first para. "Enablement concerns teaching one of ordinary skill in the art how to practice the invention." *Fiers v. Revel*, 984 F.2d 1165 (Fed. Cir. 1993).

Furthermore, in many cases, patentees will have made a deposit of seeds or other material in an approved public depository, such as the American Type Culture Collection, to meet the enablement or written description requirement. Such deposits become freely available to the public upon issuance of the patent, and a supply must be maintained by the patentee for the effective life of the patent. United States Patent and Trademark Office, *Manual of Patent Examining Procedure* § 2404 (7th ed. Jul., 1998).

In contrast to this complete, unrestricted public access to fully enabling information and materials, there is no provision to release seeds deposited with the Department of Agriculture as a prerequisite to obtaining a PVPA certificate, and no requirement that the application for PVPA certificate contain more than a description of the identifying characteristics of the variety for which protection is sought. *See* 7 U.S.C. § 2422.

Furthermore, in the case of some plants engineered to incorporate a foreign gene or overexpress a native gene, in which the sequence of the gene is known or given in the patent specification, the art has advanced sufficiently so that the written description in the specification *alone* will be

sufficient to enable the skilled worker to reproduce the claimed plant, without the need for a deposit. The subject matter of such utility patents is not a variety that is described in general terms, as in a PVPA application, but is a plant or plant part having a discrete trait, such as herbicide resistance, that can be bred into many varietals, and can be described precisely in words. *See, e.g.,* Lundquist et al. (U.S. Pat. No. 5,554,798). While the plant scientist can obtain and experiment with the plant and seed claimed in a utility patent, even before the patent has expired, during the term or following expiration of a PVPA certificate, the interested researcher is left to obtain a sample of the variety as best he or she can. If the variety has been commercially exploited by the breeder holding the PVPA certificate for a limited part of its term and the stock is then destroyed, it may be very difficult to obtain the variety. *See, e.g., Pioneer Hi-Bred International v. Holden Foundation Seeds Inc.*, 35 F.3d 1226, 1230 (8th Cir. 1994) (Holden "discarded" inbred line). The loss of major benefits to the public that attend the utility patent system in the area of plant science fully justifies maintaining both forms of protection for sexually reproducing plants.

B. The Availability of Utility Patents Has Encouraged Development and Protection of New Plants.

Despite the potential for broad protection of genetically engineered or otherwise improved plants by utility patents, the conventional plant breeder who discovers a distinctive new variety under cultivation or develops one by cross-breeding techniques is still free to use the PPA or PVPA to secure protection for the variety – and many have. From 1930 to 1985, only 5,379 plant patents issued, while from 1985-2000, 11,337 issued. From 1971 to 1984, a total of 1297 PVPA certificates were issued, while from 1985 to January 31, 1999, nearly the same length of time, 2760 were

issued. *Progress Report of the Plant Variety Protection Office* (Jan. 31, 1999). Thus, the availability of utility patents for plants has not discouraged the conventional plant breeder from seeking PPA or PVPA protection. Indeed, as noted by Petitioner Farm Advantage, Pioneer sought and obtained protection for its inbred plants under both the PVPA and by utility patents.[7]

The issuance of the *Hibberd* patent facilitated an explosion of the filing and issuance of utility patents on all aspects of plant science. There are over 1500 pending plant utility applications. *See* PTO Technology Center 1600 and 2900, Biotechnology, Organic Chemistry and Designs, Vital Statistics, 00 Vital Stats. Doc. (Oct. 2000). Researchers in agricultural biotechnology developed new methods to introduce preselected genes into plants to improve their nutritional content or to impart pest or herbicide resistance. Some of these methods proved to be generally applicable, and they led to patents that broadly claimed transgenic species ("corn"), families of plants, and even transgenic "plants" *per se*. Some patents contain claims to multiple types.[8]

Thomas Edison's wish that Congress would develop a patent system that would advance the art of agriculture has come true. *See* S. Rep. No. 315, 71st Cong., 2d Sess. 3 (1930). Today, utility patents have issued on both field crops, such as corn, soybeans and cotton, and vegetables, such as tomatoes and squash, having properties enhanced by both conventional breeding techniques and by direct gene transfer.

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[7] This does not raise a "double patenting" issue, since PVPA certificates are not patents. *See* Solicitor General's Amicus Brief on Petition for Writ of Cert. at 19.

[8] *See, e.g.*, Umbeck, U.S. Pat. No. 5,159,135 (transgenic cotton); Lundquist et al., U.S. Pat. No. 5,508,468 (high amino acid corn); Adams et al., U.S. Pat. No. 5,780,861 (stress resistant monocot); Falco et al., U.S. Pat. No. 5,773,691 (product-by-process claim to high lysine plants and corn).

This patenting activity has not deterred farmers from adopting this new technology. *See Bio Editors' and Reporters' Guide to Biotechnology*, Biotechnology Industry Organization, Pub. (2000-2001 ed.). U.S. farmers plant more than 70% of the biotech crops grown globally. For example, in 2000, about 61% of all cotton and about 54% of all soybeans planted in the U.S. were transgenic. *See* A. M. Thayer, 78 *Chem. Eng. News,* 21 (October 2, 2000). These crops are no longer laboratory curiosities; they are in the field.

CONCLUSION

For the foregoing reasons, the AIPLA urges the Court to affirm the opinion of the Federal Circuit, thereby confirming that sexually reproducing plants are within the scope of 35 U.S.C. § 101. An inclusive and expansive patent system has strongly assisted progress in this area for more than 15 years, and its efficacy should be affirmed by this Court.

Respectfully submitted,

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No. 99-1996

IN THE

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (D/B/A FARM ADVANTAGE, INC.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (D/B/A SIOUXLAND SEEDS, INC.), KEVIN WOLFSWINKEL, TIM KAMSTRA, AND TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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BRIEF AMICUS CURIAE FOR THE AMERICAN SEED TRADE ASSOCIATION IN SUPPORT OF RESPONDENT

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BRIEF AMICUS CURIAE FOR THE AMERICAN SEED TRADE ASSOCIATION IN SUPPORT OF RESPONDENT

STATEMENT OF INTEREST OF AMICUS CURIAE

Founded in 1883, the American Seed Trade Association ("ASTA") is a voluntary, nonprofit, national trade association which represents over 500 research intensive companies engaged in the discovery, development, and marketing of new seed varieties.[1] ASTA members annually invest mil-

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[1] Pursuant to this Court's Rule 37.6, we note that no part of this brief was authored by counsel for any party, and no person or entity other than the amicus curiae filing this brief made a monetary contribution to the preparation or submission of the brief.

lions of dollars in research and development of new seed varieties by both traditional breeding methods, such as hybridization, and newer methods involving genetic modification, to produce new plant varieties and make American agriculture more productive and the country's food supply more plentiful and nutritious. ASTA's active members constitute over 95% of all active seed companies in the United States. More than 60% of ASTA's active members are small businesses, having annual sales of $1 million or less.

ASTA members hold over 1/3 of the more than 1800 utility patents which have been granted by the U.S. Patent & Trademark Office claiming plant-related subject matter. If such patents are invalidated, ASTA members would incur substantial losses of both time and money invested by them in obtaining U.S. utility patents for plant-related improvements, in protecting the intellectual property created by those improvements, and in licensing that intellectual property to others. In addition, the viability of their intellectual property would be seriously jeopardized and their incentive for further research and development would be undermined.

This brief is filed with the written consent of all parties pursuant to this Court's Rule 37.2; the requisite letters of consent have been filed with the Clerk.

STATEMENT OF THE CASE

This is a suit by Pioneer Hi-Bred International, Inc. ("Pioneer") against petitioners (collectively "Farm Advantage") for infringement of Pioneer's 17 utility patents for seed-related inventions. Each of these 17 utility patents was duly obtained pursuant to 35 U.S.C. § 101, *et seq.*, after examination in the specialized art units of the U.S. Patent & Trademark Office. That examination process, which is the same as that applied to all utility patent applications irrespective of technology, involved examination of each of Pioneer's seed-related patent applications for compliance with statutory requirements of novelty (35 U.S.C. § 102), non-obviousness (35 U.S.C. § 103) and sufficiency of disclosure (35 U.S.C.

§ 112). Each of these 17 patents was found not only to claim a new variety, but also to have documented substantial evidence of the new variety's non-obviousness—*i.e.*, its unexpected qualities of an inventive nature.

In this case, Farm Advantage filed a motion for summary judgment prior to a trial on the merits of the patent infringement claims, asserting that all of the claims of Pioneer's 17 utility patents were invalid because the claims did not fall within the classes of allowable statutory subject matter under 35 U.S.C. § 101. Because Farm Advantage could not dispute that the language of § 101 was sufficiently broad to encompass seed-related technology, it argued that Congress, by passing the Plant Variety Protection Act of 1970 (the "PVPA"),[2] intended that the PVPA be the sole and exclusive method for protecting inventive new seed-based plant varieties.

The trial court denied Farm Advantage's summary judgment motion, finding that the PVPA is not the sole and exclusive method for protecting inventive new seed corn varieties and that nowhere does the law provide that one has to make an election of intellectual property coverage under either the utility patent statute or the PVPA. Pet. App. 39. In reaching its decision, the trial court evaluated the scope of patentable subject matter afforded by § 101, as interpreted in *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980), and discussed in the legislative history of the utility patent and PVPA statutes. Pet. App. 29-30. The trial court concluded it could find no explicit support in the legislative history for the premise that Congress intended to restrict or limit the scope of patentable subject matter available under § 101 by adopting the PVPA. *Id.*

Farm Advantage appealed the denial of its summary judgment motion to the Court of Appeals for the Federal Circuit. The Federal Circuit then considered anew the question of whether, by passing the PVPA, Congress had intended that

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[2] 7 U.S.C. § 2321, *et seq.*

the PVPA be the sole and exclusive method for protecting inventive new varieties of seed-based plants. Guided by *Chakrabarty* and the legislative history of the PVPA, the Federal Circuit concluded that the "patentable subject matter under § 101 includes seeds and seed-grown plants," and affirmed the trial court's denial of Farm Advantage's summary judgment motion. *Pioneer Hi-Bred International, Inc.* v. *J.E.M. Ag Supply, Inc.*, 200 F.3d 1374, 1376 (Fed. Cir. 2000).

Farm Advantage then sought the review of this Court, which granted certiorari on February 20, 2001.

SUMMARY OF ARGUMENT

I. U.S. patent protection is available to all whose inventions meet the statutory requirements of patentability and disclosure mandated by 35 U.S.C. § 101, *et seq*. As an initial requirement, inventions must fall within the four classes of qualifying subject matter delineated in § 101, which broadly states that patents can be obtained for "any new and useful process, machine, manufacture or composition of matter, or any new or useful improvement thereof . . . ." Congress has not placed further restrictions on the statutory subject matter for which a patent can be obtained beyond the four broad categories recited in § 101. Indeed, in *Chakrabarty*, this Court recognized that "[i]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by 'any,' Congress plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308.

In addition to the requirement of claiming an invention which falls within the broad classes of statutory subject matter, as stated above, a patentable invention must also meet the novelty, non-obviousness, and disclosure requirements of 35 U.S.C. §§ 102, 103, and 112, respectively. However, it has not always been possible for inventions involving living organisms to meet the disclosure requirements of § 112. In fact, in 1970, seed- and plant-related inventions rarely met these requirements. So, in 1970, in the absence of any clear way for plant-related inventions to meet the disclosure

requirements of § 112, Congress was motivated to enact the PVPA to provide "patent-like" coverage for new, sexually reproduced plant varieties. At the time of the PVPA enactment, Congress did not amend § 101 to exclude seed- or plant-related inventions from utility patent coverage.

In contrast to 1970, today seed- and plant-related inventions routinely meet the statutory disclosure requirements of § 112. Therefore, inasmuch as Congress has made no explicit statement evidencing its intent to exclude seed- and plant-related inventions from utility patent coverage, utility patents duly granted by the U.S. Patent & Trademark Office for such inventions are entitled to the statutory presumption of patent validity afforded by 35 U.S.C. § 282, just as patents relating to every other technology are.

II. Utility patents provide needed incentives to inventors of plant-related inventions to move forward into the frontiers of agricultural science, just as utility patents provide incentives in other areas of endeavor. The fundamental principle of the constitutional patent grant—"To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries"[3]—is as applicable to inventors of new and inventive plant varieties as to inventors of new machines or processes.

A. Further advances in agricultural technology are required to feed growing populations in a sustainable environment. The development of enhanced seeds—*i.e.*, seeds which increase yields and/or decrease reliance on herbicides and pesticides—is one way to achieve these advances. Enhanced seeds and plants, which hold the promise of higher crop yields, decreased pesticide and herbicide usage, and improved nutrition, are developed at great cost by seed companies, plant developers, universities, and individuals. These costs often cannot be recouped in a single year, as they would make the cost of enhanced seeds prohibitively high.

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[3] U.S. Const. art. I, § 8, cl. 8.

The exclusivity provided by utility patent coverage, pursuant to 35 U.S.C. § 271, has sufficient scope to enable developers of seed-related inventions a chance to recoup research and development costs, because improvements derived from patented inventions which are covered by the claims of a previously patented invention are subject to both the dominant earlier patent and any utility patent obtained for a non-obvious improvement. Thus, the patent holder may charge license fees for the use of patented seed-related technology, whether for the originally developed invention or for improvements covered by a dominant utility patent, and costs associated with the product development cycle for new varieties may be recovered.

B. The public has a continuing interest in applying the full disclosure requirements of the utility patent statute to seed-related inventions. These disclosure requirements, as codified in § 112 of the patent statute, mandate that all utility patent applications contain sufficient disclosure to enable one of ordinary skill in the art to which the invention pertains to practice the invention. Section 112 also requires a description of the best mode for practicing the invention, as contemplated by the inventor at patent application filing.

Due in part to the presence of public depositories in which seed and germplasm deposits can now be made, and also to the ability to accurately describe lineage, trait, and genetic information about seeds, plants, and cellular materials, full disclosure of seed- and plant-related inventions can now be made available to the public. Accordingly, the disclosure requirements of § 112 can now be met for seed- and plant-related inventions. The fullness with which seed- and plant-related inventions can now be described and the open-ended nature of patent specifications together provide inventors of new seed- and plant-related inventions an opportunity to document aspects of their inventions far beyond the description requirements of a PVPA application. This is of great benefit to the public, because further development of new plant varieties are made possible, with the risk of undocumented characteristics in new varieties minimized and the

improper use of newly developed strains avoided. The public would lose these benefits of full disclosure should utility patents for seed- and plant-related patents be invalidated.

C. Almost 400 different individuals, universities, research institutes, seed companies, corporate entities, and governmental units have obtained a total of over 1800 utility patents for their seed- and plant-related inventions. Such widespread use of the patent process clearly confirms that the intellectual property protection afforded by utility patents provides a meaningful economic incentive to the many different entities undertaking plant-related research.

ARGUMENT

I. FEDERAL LAWS PROVIDE FOR PATENT PROTECTION FOR ALL INVENTIONS MEETING STATUTORY REQUIREMENTS OF PATENTABILITY AND CONGRESS HAS NOT EXPLICITLY EXCLUDED SEED- AND PLANT-RELATED INVENTIONS FROM QUALIFYING AS PATENTABLE SUBJECT MATTER.

To obtain a U.S. utility patent for a new invention, one must meet the statutory requirements of patentability pursuant to 35 U.S.C. § 101, *et seq*. Initially, § 101 broadly states that patents can be obtained for "any new and useful process, machine, manufacture or composition of matter, or any new or useful improvement thereof . . . ." Thereafter, §§ 102 and 103 detail the requirements of novelty and non-obviousness for patentable inventions. Finally, § 112 describes the disclosure requirements applicable to patentable inventions and the applications describing the claimed inventions.

Congress has not placed restrictions on the statutory subject matter for which a patent can be obtained beyond the four broad categories recited in the statute. Indeed, this Court, in its 1980 decision in *Chakrabarty,* recognized that "[i]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by 'any,' Congress plainly contemplated that the patent laws would be given wide scope." 447 U.S. at 308.

It is worth noting that the four categories delineated in § 101 broadly describe categories of inventive subject matter—*i.e.*, processes, machines, manufactures and compositions of matter—which stretch across all fields of technology. Section 101 does not define or exclude patentable subject matter by technology type, and Congress has not manifested any clear intent to separately identify and exclude a single technology from qualifying as patentable subject matter under § 101.

The Plant Patent Act of 1930 ("PPA")[4] was enacted to provide specific patent protection for inventions relating to plants reproduced by asexual reproduction. It did not amend § 101, but rather added specific patent protection for plant-related inventions which could not, at that time, meet the disclosure requirements of § 112 for plants reproduced by asexual reproduction. In recent years, inventions related to such asexually reproduced plants have qualified for utility patent coverage under § 101, and hundreds of utility patents have been granted for such plant-related inventions. One example of a such a utility patent covering an asexually reproduced plant is U.S. Patent No. 4,686,318 for "Kiwifruit Plant" which was granted on August 11, 1987, to two individuals.

Similarly, in 1970, the PVPA was enacted to provide "patent-like" coverage for new varieties of plants reproduced by seed. At that time, there was generally no patent or patent-like protection available for sexually reproduced plants. However, this was due to technical limitations of the time, which made it all but impossible to meet the full disclosure requirements of the utility patent statute, as required by § 112.

In enacting the PVPA, Congress made it clear that the PVPA was not intended to "alter protection currently available within the patent system." S. Rep. No. 91-1246, at 2 (1970). *See also Ex parte Hibberd*, 227 U.S.P.Q. 443, 445

[4] 35 U.S.C. §§ 161-164.

(Bd. Pat. App. & Interf. 1985). It has now been over 30 years since enactment of the PVPA and Congress has not changed its position in this regard. Had Congress wanted to alter the protection for plants available under the patent system after the 1980 *Chakrabarty* decision, it could have done so by either amending the PVPA in some way or making a clear statement of its intent in the legislative history to the PVPA amendments of 1994. Congress did not do so.

Petitioners would have this Court carve out seed-related inventions from utility patent coverage in derogation of the Court's holding in *Chakrabarty* that "Congress plainly contemplated that the patent laws would be given wide scope" and that § 101 should be interpreted in accordance with Congress' intent that it "include anything under the sun that is made by man." However, carving out seed-related inventions from utility patent coverage would create a substantial inconsistency in the law because new varieties of asexually reproduced plants would continue to qualify for both U.S. plant patent coverage and utility patent status. If one's development work relates to asexually reproduced plants, one can apply for a utility patent and undergo a rigorous examination of the invention by the U.S. Patent & Trademark Office to determine if the work meets the stringent requirements of patentability imposed by §§ 102, 103, and 112, *et seq.*, but if one's development work relates to sexually reproduced plants, one cannot do so.

II. THE ECONOMIC INCENTIVE PROVIDED BY THE CONSTITUTIONAL PATENT GRANT IS AS NECESSARY TO THE DEVELOPMENT OF PLANT-RELATED INVENTIONS AS IT IS TO THE FURTHERANCE OF EVERY OTHER TECHNOLOGY.

Utility patents provide needed incentives to inventors of plant-related inventions to move forward into the frontiers of agricultural science, just as utility patents provide incentives in other areas of endeavor. Indeed, the fundamental principle of the constitutional patent grant—"To promote the progress of science and useful arts, by securing for limited times to

authors and inventors the exclusive right to their respective writings and discoveries"[5]—is as applicable to inventors of new and inventive plant varieties as to inventors of new machines or processes.

The economic incentive provided by granting to inventors a period of exclusive use of their inventions—irrespective of the subject matter—is recognized as a significant driving force for scientific development. The public benefits in two ways: (1) by being able to use patented inventions, whether through purchase or licensing, and (2) by receiving full disclosure of patented inventions, thereby allowing for further improvements to the patented invention and application to other products and processes of the inventive concepts disclosed. In this way, "the patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in technology, in return for an exclusive monopoly for a limited period of time." *Pfaff* v. *Wells Electronics, Inc.*, 525 U.S. 55, 63 (1998). This "patent bargain" is as applicable to seed companies and plant developers as it is to every other industry in the United States, including medical device companies, semiconductor manufacturers, computer software developers, automobile companies, and farm equipment suppliers.

A. The Licensing Of Patented Seed-Related Technology Funds The Development Cycle For New Varieties Needed To Produce Crops To Feed Growing Populations In An Environmentally Sustainable Way.

As populations have grown, the amount of arable land in the U.S. and elsewhere in the world has steadily decreased. The burgeoning world population—reaching over 6 billion people in the year 2000—has brought about the steady conversion of farmland into home and apartment sites, shopping centers, parking lots, and office buildings. This phenomenon is particularly evident in the United States, where, in 1950, farm acreage totaled over 1.1 billion acres

[5] U.S. Const. art. I, § 8, cl. 8.

and by 1997, farm acreage had shrunk to just over 0.9 billion acres—a decrease of almost 20%.[6]

Despite this continuing decrease in arable land, food shortages have been avoided in large part by the increased productivity and yield achieved by American farmers. From 1940 to 1970, American farmers increased their per acre yield of corn by 150%, of wheat by 102%, and of soybeans by 64%.[7] From 1970 to 2000, American farmers achieved further increases in per acre yields of corn by almost 90%, of wheat by 35%, and of soybeans by 42%.[8] From 1940 to 2000, total harvested corn grown for grain increased from 2.2 billion bushels to over 9.9 billion bushels.[9] Total harvested wheat increased from 0.8 billion bushels to over 2.2 billion bushels in the same period.[10]

One means of achieving such remarkable results in crop yields has been an increase in the use of chemical herbicides and pesticides. As a consequence, however, there are increasing environmental impact issues relating to the use of such chemicals. Clearly, further advances are needed in agricultural technology to feed the burgeoning population in an environmentally sustainable manner, even as the amount of arable land continues to shrink. The development of enhanced seeds—*i.e.*, seeds which can increase yields and decrease reliance on herbicides and pesticides—is one way to achieve these advances.[11]

[6] *See* National Agric. Statistics Serv., U.S. Dep't of Agric., *Trends in U.S. Agriculture—Farm Numbers and Land in Farms, available at* http://www.usda.gov/nass/pubs/trends/farmnumbers.htm.

[7] *See* National Agric. Statistics Serv., U.S. Dep't of Agric., *available at* http://www.nass.usda.gov:81/ipedb/report.htm.

[8] *Id.*

[9] *Id.*

[10] *Id.*

[11] Nick Smith, *Seeds of Opportunity: An Assessment of the Benefits, Safety, and Oversight of Plant Genomics and Agricultural Biotechnology* (Apr. 13, 2000) (prepared by Chairman Nick

Enhanced seeds may be created with conventional breeding programs, such as hybridization and generational improvements.[12] The Pioneer Hi-Bred International, Inc. patents at issue in this case cover such kinds of enhanced seeds—*i.e.*, inventive new varieties developed through conventional breeding programs. Enhanced seeds may also be created through the use of genetic modification techniques which cause enhanced expression of desired characteristics.[13] A holding by the Court that utility patent coverage is not available for new and inventive sexually reproduced plants would prevent patent coverage for enhanced seeds created through conventional breeding programs as well as those created using genetic modification techniques.

There is no question that enhanced seeds increase yields and decrease reliance on herbicides and pesticides. An April 2000 U.S. Department of Agriculture publication entitled "Genetically Engineered Crops for Pest Management in U.S. Agriculture: Farm-Level Effects" summarizes numerous studies of enhanced corn, cotton, and soybean seeds.[14] With respect to Bt cotton—cotton which has been genetically modified to express higher levels of Bt proteins, a natural insecticide—the publication reports that, in 1997, the farm level effects included an increase in cotton yield, an increase in farm-level net returns, and a decrease in the use of certain

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Smith of House Subcommittee on Basic Research and transmitted to the House Committee on Science, 106th Congress), *available at* http://www.house.gov/science/smithreport 041300.pdf.

[12] *See* National Agric. Statistics Serv., U.S. Dep't of Agric., *Trends in U.S. Agriculture—Corn Hybridization*, *available at* http://www.usda.gov/nass/pubs/trends/cornhybridation.htm.

[13] *See, e.g.*, U.S. Dep't of State, *Healthy Harvests: Growth Through Biotechnology* (Mar. 21, 2000), *available at* http://www.state.gov/www/global/oes/fs-biotech_growth_000321.html.

[14] J. Fernandez-Cornejo, *et al.*, U.S. Dep't of Agric., Agric. Economic Rep. No. 786, *Genetically Engineered Crops for Pest Management in U.S. Agriculture: Farm-Level Effects* (Apr. 2000), *available at* http://www.ers.usda.gov/publications/AER 786.

insecticides.[15] With respect to adoption of new varieties of herbicide-tolerant soybeans, overall total herbicide usage decreased. The report concludes that

> farmers believe that the use of [genetically engineered] crops will offer them many benefits, such as higher yields, lower pest management costs, and greater cropping practice flexibility. While benefits and performance of these crops vary greatly by region because of pest infestation levels and other factors, the rapid adoption rates are evidence that, for many farmers, expected benefits outweigh expected costs.[16]

Research and development costs associated with use of enhanced seeds, whether to increase crop yields or decrease usage of chemical herbicides and pesticides, are very high. Indeed, by 1994, private companies were spending over $338 million dollars on plant breeding research and development.[17] Biotechnology research in this area is particularly expensive. By 1989, expenditures on biotechnology related to plant breeding in the U.S. already constituted at least 33% of the plant breeding research expenditures.[18]

To keep the product development cycle in motion amongst U.S. seed companies, inventors and their companies must recoup their development costs through license fees. These fees are typically set forth in utility patent licenses granted by owners of utility patents for plant-related inventions to seed distributors and others who market their seed, and also to

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[15] *Id.*

[16] *Id.*

[17] R.R. Kalton, *et al.*, *Inputs in Private Sector Plant Breeding and Biotechnology Research Programs in the United States*, 5 Diversity No. 4, 22-25 (1989).

[18] K.J. Frey, Iowa State Univ., Special Rep. 98, *National Plant Breeding Study-I: Human and Financial Resources Devoted to Plant Breeding Research and Development in the United States in 1994* (1996).

growers, who use the seed to grow crops for consumption by humans or livestock.

B. The Public Benefits From Applying The Full Disclosure Requirements For Utility Patents To Seed- and Plant-Related Inventions Because It Allows Plant Developers To Improve Upon The Patented Inventions Of Others.

U.S. patent law requires that all utility patent applications

> contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same . . . . [35 U.S.C. § 112.]

This statutory requirement is met in plant-related utility patents by: (1) including a detailed variety description in the specification of each utility patent application, and (2) depositing seeds or genetic material with a public depository. For example, referring to U.S. Patent No. 5,506,367 for INBRED CORN LINE PHP38 (which is assigned to respondent Pioneer Hi-Bred International, Inc. and is one of the bases of the underlying patent infringement in the present case), the Detailed Description of the Invention at columns 7 and 8 includes Variety Description Information detailing corn ear, tassel, and leaf measurements and disease resistance features. The Detailed Description concludes with the following description of the seed deposit:

> Applicant has made a deposit of at least 2500 seeds of inbred PHP38 with the American Type Culture Collection (ATCC), Rockville, Md. 20852 USA, ATCC Deposit No. 75612. The seeds deposited with the ATCC on November 9, 1993 were taken from the same deposit maintained by Pioneer Hi-Bred International, Inc., 700 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340 since prior to the filing date of this application. This deposit of Inbred Corn Line PHP38 will be maintained in the ATCC

> depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the effective life of the patent, whichever is longer, and will be replaced if it becomes nonviable during that period.

When patent holders meet the disclosure requirements of § 112, seed and plant breeders are able to improve upon the inventive features of new varieties.

These disclosures also have another benefit—they can help avoid improper use of newly developed varieties by describing incompatibilities of a patented variety. While the PVPA does have disclosure requirements of its own, it does not require disclosure of incompatibilities. Because the PVPA disclosure requirements are minimal, undocumented characteristics are quite possible. In contrast, under the utility patent statutory requirement, the inventor must describe not only how to make a patented invention, but also how to use the invention. In some cases, this may require an inventor to describe how the new variety cannot be used. By doing so, improper crosses and crop practices can be avoided.

The only way to ensure that plant- and seed-related research and inventions flowing from such research are fully disclosed to the public is to make sure the "patent bargain" remains applicable to plant-related technologies. In this way, the public further benefits from the full disclosure of new inventions. Just as in all other technologies, utility patent disclosures for plant-related inventions will continue to provide a springboard for further improvements and a deeper understanding of seeds, plants, and crops.

C. Invalidating Utility Patents For Seed- and Plant-Related Inventions Would Unravel Established Relationships Among Inventors, Seed Companies, Universities, Government Entities, And Growers.

The more than 1800 utility patents claiming plant-related inventions are owned by many different individuals and entities. Over 30 of these patents do not even list an assignee

on their title page, indicating that the individual inventor(s) owned the technology at the time the patent was granted.[19] These individuals would of course be directly affected should their patents be invalidated here.

The bulk of the utility patents claiming patent-related inventions are assigned on their face to corporations. Some of these companies are smaller seed companies—like Agripro Seeds, Inc., Cornuts Hybrids, Inc., Crookham Company, Dairyland Seed Co., Inc., FFR Cooperative, Gold Kist, Inc., Harris Moran Seed Company, J.C. Robinson Seed Company, NorCal Wild Rice, NPI Seed, Inc., Optimum Quality Grains, L.L.C., Pan American Seed Company, Resource Seeds, Inc., RiceTec, Inc., Rupp Seeds Inc., and United AgriSeeds—each of which owns only one or two U.S. utility patents. Larger companies—for example, Garst Seed Company, Midwest Oilseeds, Inc., and Seminis Vegetable Seeds, Inc.—have obtained a dozen or so U.S. utility patents covering plant-related inventions. Of course there also are yet larger companies which have invested substantial money and effort in research and development projects and in the legal expenses of applying for and obtaining twenty or more such utility patents. These companies include Asgrow Seed Company, Dekalb Genetics Corp., E.I. Du Pont de Nemours and Company, Holden's Foundation Seeds, Inc., Monsanto Corporation, Novartis AG, Pioneer Hi-Bred International, Inc., Stine Seed Farm, Inc., and Zeneca Limited.

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[19] In accordance with 35 U.S.C. § 152, 37 C.F.R § 3.81, and the Manual of Patent Examining Procedure § 307 (7th ed. 2000), a patent will issue to an assignee, provided an assignment is recorded in the U.S. Patent & Trademark Office on or before payment of an issue fee and the assignee's name and address are both identified on the Issue Fee Transmittal. Accordingly, a patent which does not list an assignee may in fact have been assigned, but the assignee is not listed because the assignment was not recorded or the assignee's name was omitted from the Issue Fee Transmittal. However, it is a standard practice of patent practitioners to take the steps necessary to list assignees on patents which are assigned.

The last three decades have seen a growing reliance by universities and colleges in the United States on income generated from the licensing of utility patents for inventions developed in university research programs and subsequently found patentable by the U.S. Patent & Trademark Office. This trend is also present in the agricultural arts, as is evidenced by the fact that over 230 of the more than 1800 plant-related utility patents which have been granted list one of the following universities as the assignee on the face of the patents:

University of Arizona
University of California
California Institute of Technology
Carnegie Institution
Colorado State University
Cornell Research Foundation, Inc.
Drexel University
Duke University
University of Florida
University of Hawaii
Northern Illinois University
Iowa State University
Kansas State University
University of Kentucky
Louisiana State University
University of Maryland
University of Massachusetts
Massachusetts Institute of Technology
Michigan State University
University of Minnesota
Mississippi State University
University of Montana
University of Nebraska
University of Nevada
University of Oklahoma
Ohio State University
New York University
North Carolina State University
North Dakota State University

Northeastern University
Pennsylvania State University
Purdue Research Foundation
Rockefeller University
Rutgers, the State University of New Jersey
Rockefeller University
University of Tennessee
Texas A&M University
Vanderbilt University
Yale University
Washington State University
Australian National University (Australia)
University of Queensland (Australia)
Queen's University at Kingston (Canada)
University of British Columbia (Canada)
University of Guelph (Canada)
Helsinki University (Finland)
University of Glasgow (Scotland)
Chaing Mai University (Thailand)

Governmental agencies have also obtained U.S. utility patents for plant-related inventions. The Canadian government holds ten utility patents for plant-related inventions.[20] The State of Israel's Ministry of Agriculture is listed on two plant-related U.S. utility patents.[21]

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[20] A Canadian federal court recently addressed the analogous issue to that confronting this Court when confronted with the question of whether the Canadian Plant Breeders' Rights Act of 1990 evidenced Parliament's intent "that intellectual property rights pertaining new plant varieties are to be governed by legislation other than the Patent Act and only to the extent permitted under the [Plant Breeders'] Act." *Monsanto Canada, Inc.* v. *Schmeiser*, [2001] F.C. 256, *available at* 2001 Fed. Ct. Trial LEXIS 174, at *46 (quotation omitted). The Canadian court ruled that "the [Plant Breeders' Rights Act] was not intended to, and by its terms it does not, preclude registration under the Patent Act of 1990 inventions that relate to plants, and that may lead to new varieties or characteristics of plants." *Id.* at *48-49.

[21] Co-existence of utility patent coverage for plant- and seed-related inventions and certification status for new plant varieties is consistent with the 1991 Act of the International Convention for the Protection of New Varieties of Plants ("UPOV"). *See* S. Treaty Doc. No. 104-17. The Act is silent as to the title of protection under which a plant breeder's rights may be granted, thus affording member States the freedom to provide protection for plant varieties both through patents and through certification programs.

Even more significant—thirteen of the more than 1800 utility patents which have been granted for plant-related inventions list "[t]he United States as represented by the Secretary of Agriculture" as the assignee on the title page of the patent.[22] Clearly, the U.S. Department of Agriculture, which administers the PVPA, does *not* see the PVPA as the sole form of intellectual property applicable to seeds.

Indeed, the Department of Agriculture's practices in this regard are consistent with the Solicitor General's expression of the unambiguous views of the United States in its Brief for the United States as Amicus Curiae filed with this Court in January 2001. It is the view of the United States that the Federal Circuit was correct in concluding that (1) there was nothing in the text of § 101, the PPA, or the PVPA which narrows the scope of the utility patent statute by excluding plants from eligibility for protection, and (2) the asserted conflict between the PVPA and the utility patent statute is simply the difference in the rights and obligations imposed by the statutes, which can be applied simultaneously without difficulty.

Clearly, a key element of the fabric of agriculture in the United States today is the business relationships which arise out of the intellectual property rights obtained by the hundreds of assignees owning duly granted U.S. utility patents for seed-related inventions. These long-established relationships among growers, distributors, developers, and universities, which have been created in reliance on such patents, promote further research and development of new seed varieties. To invalidate the utility patents upon which these

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[22] *See* U.S. Pat. Nos. 5,571,706, 5,650,558, 5,689,054, 5,710,367, 5,723,766, 5,792,934, 5,811,636, 6,077,995, 6,111,168, 5,959,180, 5,914,450, 6,156,956, and 6,174,725.

relationships are based would be inappropriate, given that inventions such as these clearly qualify as patentable subject matter under § 101 and can fully meet the disclosure requirements of § 112.

CONCLUSION

For the foregoing reasons, the judgment below should be affirmed.

Respectfully submitted,

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Supreme Court, U.S.
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No. 99-1996

IN THE

Supreme Court of the United States

J.E.M. AG SUPPLY, INC., (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT, KEVIN WOLSWINKEL, TIM KAMSTRA and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF THE AMERICAN BAR ASSOCIATION AS *AMICUS CURIAE* IN SUPPORT OF RESPONDENT

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QUESTION PRESENTED

Are patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (*i.e.*, by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. § 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants or plant varieties?

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STATEMENT OF INTEREST

The American Bar Association ("ABA"), with more than 400,000 members, is the leading national membership organization of the legal profession. Its members come from each of the fifty states, the District of Columbia and the U.S. territories. Membership is voluntary and includes attorneys in private practice, government service, corporate law departments and public interest organizations, as well as legislators, law professors, law students, and non-lawyer associates in related fields.[1] The ABA supports a strong patent system, recognizing the important incentives it provides for technological progress. The on going activities of the ABA's Section of Intellectual Property Law are specifically directed to this purpose. As such, the ABA is deeply concerned that critical patent protection continue to be provided for certain categories of inventions made in plants.

After the Court's recent order granting review in this case, the ABA Board of Governors adopted the following resolution as ABA policy:

> RESOLVED, that the American Bar Association favors in principle the patentability of (1) plants and seeds and (2) essentially biological processes for the production of the same plants or seeds under 35 U.S.C. § 101 notwithstanding the protection of plants provided under

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[1] This brief is filed with the consent of both Petitioners and Respondent. *Amicus Curiae*, ABA, states that this brief has not been authored in whole or in part by counsel for a party and that no person or entity, other than *Amicus*, its members, or its counsel, has made a monetary contribution to the preparation or submission of this brief. Neither this brief nor the decision to file it should be interpreted to reflect the views of any judicial member of the American Bar Association. No inference should be drawn that any member of the Judicial Division Council has participated in the adoption of or endorsement of the positions in this brief. This brief was not circulated to any member of the Judicial Division Council prior to filing.

the Plant Patent Act of 1930 (35 U.S.C. §§ 161-164) and the Plant Variety Protection Act (7 U.S.C. § 2321 *et seq.*).

This brief is submitted in accordance with this policy and to assist in securing implementation of the principle that it supports.

SUMMARY OF ARGUMENT

Living matter, including plants, was long thought not to be patentable subject matter under the broad terms of 35 U.S.C. § 101 (1994) and its predecessor statutes. In *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), however, this Court held that there is no prohibition against the patenting of living matter. The United States Patent & Trademark Office ("PTO") began to issue patents for plants under § 101 soon after the *Chakrabarty* decision. The Federal Circuit in the case below recently upheld this long unchallenged practice.

Petitioners now ask the Court to overturn the reasoned conclusion of both the PTO and the Federal Circuit and to hold that plants are not patentable under the broad provisions of 35 U.S.C. § 101. The PTO and the Federal Circuit have specialized competence—the former to examine and issue patents; the latter to adjudicate appeals arising under this country's patent laws. *See* 35 U.S.C. § 131 (Supp. V 1999); *see also* 28 U.S.C. §§ 1291, 1292(c)-(d), 1295 (1994 and Supp. V 1999). Petitioners maintain that two particular plant-specific statutes preclude the issuance of patents under § 101.

In support of their position, Petitioners put forward three arguments. First, under the canons of statutory construction, they argue that the subsequent and arguably more narrow provisions of the plant-specific acts should control and preempt the more general provisions of § 101. Second, they argue that the legislative histories of the plant-specific acts show a specific congressional intent to exclude plants from § 101. And third, they argue that allowing plant patents

under § 101 fatally conflicts with the roles of the plant-specific acts, creating what Petitioners call an impermissible "dual protection" scheme. All three arguments are wrong.

Petitioners' argument that the plant-specific acts preclude the issuance of patents under § 101 based on their purportedly narrower provisions conflicts with the fundamental principle that statutes are to be given their most harmonious, comprehensive meaning possible. Although more specific legislation can at times operate to limit earlier legislation, this outcome is highly disfavored and occurs only where the statutory schemes are repugnant to each other or where Congress has made its intention explicit. Neither condition is met here.

The legislative histories to the plant-specific acts do not exhibit a specific congressional intent to preclude plant protection under § 101. Rather, the cited legislative materials merely reiterate the then-common view that living subject matter, including plants, was not patentable at all—the very view rejected in *Chakrabarty*. Perhaps more important, the most recent amendments to the patent code evidence a clear understanding on the part of Congress that plants are patentable under § 101. Thus, to the extent that reliance on legislative history is appropriate in this case, Congress's pre-*Chakrabarty* statements regarding the conventional wisdom about the patentability of plants cannot trump Congress's clear intent to facilitate the patenting of plants under § 101 as expressed in its most recent patent legislation.

Finally, there is no recognized legal principle that "dual protection" schemes cannot coexist. Indeed, it is clear that dual protection regimes do exist, and that the courts have upheld their co-existence. The cases relied upon by Petitioners to show the loss (or denial by a court) of protection where intellectual property regimes overlap do not demonstrate that overlapping regimes are impermissible, *per se*. Rather, these cases turn on the failure of the article in

question to meet the requirements of one particular intellectual property regime or another (*e.g.*, a loss of trade dress protection because the protected article did not meet the non-functionality requirement).

In short, the provisions of § 101 are broad, as articulated by Congress and as recognized by the Court in *Chakrabarty*. Thus, the baseline construction of § 101 must be that plants are patentable subject matter. Petitioners' arguments simply do not provide a compelling, alternative construction of the law or provide clear evidence of a contrary legislative intent. Moreover, in the 16 years since the PTO first began issuing patents for plants under § 101, Congress not only did not enact any restrictions on this practice, it amended the patent code to facilitate it. For all these reasons, Petitioners' request that the Court foreclose the patenting of plants under § 101 should be denied.

ARGUMENT

A. Background Regarding the Patentability of Plants

The sole issue in this case is whether plants are patentable under the general provisions of the patent code, 35 U.S.C. § 101 (1994), or whether protection for plants is strictly limited to the rights obtainable under the Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321-2582 (1994 and Supp. II 1996) and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164 (1994, Supp. IV 1998 and Supp. V 1999). The scope of patentable subject matter is broadly set forth in 35 U.S.C. § 101:

> [w]hoever invents or discovers any new or useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

On its face, § 101 does not impose significant restrictions on the scope of patentable subject matter. Nor does § 101 contain an explicit prohibition against the patenting of plants.

Notwithstanding the broad language of § 101, and its virtually identical predecessor statutes (for example, the Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318, 319 and the Act of July 8, 1870, ch. 230, § 24, 16 Stat. 198, 201), for a long time practitioners generally considered plants to be unpatentable. The conventional wisdom at that time had two bases. First, it was generally considered that "products of nature" or living matter, such as plants and animals, were simply not within the scope of patentable subject matter. *See, e.g., Diamond v. Chakrabarty*, 447 U.S. 303, 311 (1980) (citing *Ex parte Latimer*, 1889 Dec. Comm'r Pat. 123). Second, it was thought that plants were not amenable to the written description requirement as set forth in the patent statute. *Id.* at 312 (citing congressional hearings); *see also* 35 U.S.C. § 112 ¶1 (1994) (requiring that the specification of a patent "contain a written description of the invention . . . [in] clear, concise and exact terms . . .").

In response to the then-prevailing view that plants were not patentable, Congress separately enacted plant-specific protection regimes for asexually and sexually reproduced plant varieties. *See* Plant Patent Act of 1930, 35 U.S.C. §§ 161-164 (1994, Supp. IV 1998 and Supp. V 1999) ("PPA") (protecting asexually reproduced plants); *see also* Plant Variety Protection Act of 1970, 7 U.S.C. §§ 2321-2582 (1994 and Supp. II 1996) ("PVPA") (protecting sexually reproduced plants).

Subsequent to enactment of the PVPA and the PPA, the Court rejected the argument that an invention could not be patentable simply because it was living. *See Chakrabarty*, 447 U.S. at 309-310 (holding that genetically engineered microorganisms are patentable subject matter under 35 U.S.C. § 101). The language of 35 U.S.C. § 101 encompasses plants,

as well as microorganisms. Petitioners apparently concede that the fact that plants are living organisms is not an impediment to patentability. *See* Petition for Writ of Certiorari, *J.E.M. Ag Supply Int'l, Inc. v. Pioneer Hi-Bred Int'l Inc.*, No. 99-1996 at 18.

In 1985, following the line of reasoning set forth in *Chakrabarty*, the PTO also concluded that plants are patentable subject matter under § 101. *See Ex parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985); *cf., Animal Legal Defense Fund v. Quigg*, 932 F.2d 920 (Fed. Cir. 1991) (upholding authority of Commissioner to issue notice and interpretative ruling stating that multicellular organisms, including animals, would be treated as patentable). The Federal Circuit's holding in the instant case reaffirmed the conclusion previously reached by the PTO in *Hibberd* that plant inventions were patentable under § 101.

As noted above, Petitioners do not appear to be contending that plants are unpatentable under § 101 by its terms alone or simply because plants are living matter.[2] Rather, Petitioners argue that Congress's passage of the PPA and the PVPA effectively removed plants from the scope of patentable subject matter under 35 U.S.C. § 101 and its predecessor statutes, notwithstanding the fact that these provisions contain no such specific exclusion. In support of their argument, Petitioners rely on three propositions: First, the plant-specific statutes are said to preempt the eligibility of plant inventions

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[2] As their only possible argument regarding the scope of § 101 *per se*, Petitioners state that "Jefferson's exclusion of 'plant' from the definition of things patentable was a conscious omission." *See* Brief for Petitioners at footnote 4. This assertion is unsubstantiated. Moreover, many things now considered patentable, such as microorganisms and business methods, might have been considered unpatentable in the eighteenth century. *See Chakrabarty*, 447 U.S. at 309-310; *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) *cert. denied*, 525 U.S. 1093 (1999).

for patents under § 101. *See* Brief for Petitioners at 16. Second, they argue that the legislative histories of the PPA and the PVPA allegedly show a specific congressional intent to exclude plant inventions from eligibility for patents under § 101. *See* Brief for Petitioners at 28-43. And third, Petitioners claim that allowing plant patents under § 101 fatally conflicts with the roles of the PPA and the PVPA, impermissibly creating a "dual protection" scheme. *See* Brief for Petitioners at 43-49.

B. Canons of Statutory Construction Militate Against Excluding Plants from § 101

Petitioners take the general position that subsequent and arguably more narrow legislation preempts earlier legislation. *See* Brief for Petitioners at 16. This position is over-broad, however, and misstates the priorities relevant to statutory construction. As a baseline proposition, where federal statutes overlap, or where purportedly conflicting provisions are found in the same act, a court should give the statutes "the most harmonious, comprehensive meaning possible." *See Weinberger v. Hynson, Wescot & Dunning, Inc.*, 412 U.S. 609, 631 (1973); *see also United States v. Borden Co.*, 308 U.S. 188 (1939) ("the rule is to give effect to both [acts] if possible"). Also, in construing the scope of a federal statute, the acts of subsequent Congresses generally do not reliably inform the interpretation of earlier enacted statutes. *See, e.g., United States v. Price*, 361 U.S. 304, 313 (1960). Even partial repeal of a statute by implication is disfavored and should be avoided. *See, e.g., Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1017 (1984); *Borden*, 308 U.S. at 198.

As noted above, historically, the central impediment to issuing patents for plants pursuant to § 101 and its predecessor statutes had been the view that living matter, altered by humans or not, was unpatentable *per se* (*i.e.*, not patent eligible subject matter). Following *Chakrabarty*,

however, it is clear that this view is incorrect. *Chakrabarty*, 447 U.S. at 310 (noting that the applicant's "discovery is not nature's handiwork, but his own; accordingly it is patentable subject matter under § 101"). Thus, on first principles, plants that have been intentionally bred or modified are patentable subject matter under § 101.

Turning to the plant-specific acts, the texts of the PPA and the PVPA reveal no explicit provisions excluding plants from the scope of § 101. Rather, the PPA and the PVPA simply recite the affirmative rights and limitations granted under each act and the requirements for gaining their benefit. Thus, under the canons and cases cited above, the mere existence of the PPA and the PVPA does not weigh in favor of excluding plants *by implication* from the expansive terms of the earlier-enacted statutes governing the scope of patentable subject matter and that are now found in § 101.

In support of their argument, Petitioners rely on the Court's recent decision in *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000). *See* Brief for Petitioners at 14, 16. *Brown & Williamson* is readily distinguishable, however.

In *Brown & Williamson*, the Court ruled that the FDA overstepped its authority in attempting to regulate tobacco products based on the FDA's redefinition of nicotine as a "drug" and cigarettes as "drug delivery devices." *Id.* at 127-28, 160-61. A key factor in the Court's rejection of the FDA's assertion of authority over tobacco products was the clear conflict between the FDA's regulatory mission and Congress's separate legislation regulating the sale of tobacco products. *Id.* at 137. The Court also noted that Congress never explicitly conferred jurisdiction over tobacco on the FDA, despite several proposals to do so. *Id.* at 147-49. Neither of these factors applies here.

As noted by the Court in *Brown & Williamson*, under the FDA's regulatory mission, tobacco products would

necessarily be banned or removed from the market were the FDA to be granted jurisdiction. *Id.* at 137 (commenting that tobacco products cannot be "safe and effective"). Yet Congress's separate legislation specifically regulating tobacco products clearly intended that tobacco products would remain on the market. *Id.* Because these regimes were irreconcilable, *i.e.*, tobacco products cannot simultaneously be removed from the market and continue to be sold, the Court concluded that recognizing FDA jurisdiction over tobacco would conflict with the clear intent on the part of Congress that tobacco products remain on the market. *Id.* at 143.

In the present case, the conflict of diametrically opposed legislative aims found in *Brown & Williamson* does not exist. As discussed in more detail below, the rights conferred by a "utility" patent under § 101, a plant patent under the PPA and a certificate under the PVPA are similar, though not identical. Thus, an inventor could comply with the requirements of one or more of the regimes and hold rights accordingly. The fact that the rights accorded by each statutory provision are different simply reflects the differing requirements for each regime. Indeed, as a general proposition, and assuming that one has complied with all of the relevant requirements of each intellectual property regime, overlapping intellectual property rights are neither novel nor evidence of conflicting legislative intent. *See, e.g.*, *Kohler Co. v. Moen Inc.*, 12 F.3d 632, 638-39, 643 (7th Cir. 1993) (rejecting argument that existence of design patent protection barred trademark protection for product design). Consequently, an overlap between a plant utility patent under § 101 and either a plant patent under the PPA or a plant certificate under the PVPA cannot be considered to be a "conflict."

The *Brown & Williamson* decision was also based on clear evidence that Congress had repeatedly rejected bills that would have conferred jurisdiction over tobacco on the FDA.

See Brown & Williamson, 529 U.S. at 147-49. Again, the analogous circumstance is not present in this case.[3] As will be discussed below, Congress recently passed patent legislation amending 35 U.S.C. § 119(f) with the clear intent to facilitate the PTO's issuance of utility patents for plant inventions under § 101.

In short, the *Brown & Williamson* decision does not stand for the unqualified proposition that subsequent, narrower legislation preempts preceding, broader legislation. In the other cases cited by Petitioners, either the legislative schemes in question had direct and irreconcilable conflicts, such as in *Brown & Williamson*, or the legislative history of the subsequent act made it clear that Congress intended to preempt the earlier legislation. *See, e.g., United States v. Estate of Romani*, 523 U.S. 517, 532-34 (1998) (noting inconsistencies between statutes at issue and frustration of congressional intent); *Fourco Glass Co. v. Transmirra Products Corp.*, 353 U.S. 222, 224-25 (1957) (noting that legislative history of predecessor patent venue statute showed that Congress intended statute to be sole basis for venue in patent infringement litigation). Because irreconcilable conflicts among the statutes in this case do not exist, and because there is no explicit indication that Congress intended the PVPA or the PPA to preempt § 101, one cannot conclude § 101 does not encompass plant inventions simply because other regimes are available.

C. Congress's Amendments to the Patent Statutes Show an Intent to Include Plants within the Scope of § 101

Petitioners assert that the legislative histories of the PPA and the PVPA demonstrate that Congress specifically sought

[3] *Brown & Williamson* also did not involve an administrative agency's response to significant reinterpretation of its governing statute, such as occurred after the *Chakrabarty* decision and which ultimately led the PTO to determine that plants were patentable subject matter under § 101.

to exclude plants from general § 101-based patentability. *See* Brief for Petitioners at 37, 43. The relevant legislative histories do not support Petitioners' claim, however. Rather, the statements relied upon by Petitioners merely reiterate the then-prevailing belief that plants, as with other living subject matter, could not satisfy the various statutory requirements for patentability.

For example, Petitioners quote the House Report accompanying passage of the PVPA at length. *See* Petitioner's Brief at 40. Yet the House Report merely reiterates the conventional wisdom that "[u]nder patent law, protection is *presently* limited to those varieties of plants which reproduce asexually [*i.e.*, under the PPA] . . . . No protection is available to those varieties of plants which reproduce sexually . . . ." *See* H.R. Rep. 91-1605 (1970), *reprinted in* 1970 U.S.C.C.A.N. 5082, 5083 (emphasis added). Similarly, the Senate Judiciary Committee comments cited by Petitioners acknowledge the same point but also go on to state that the PVPA "does *not* alter protection currently available within the patent system." *See* Brief for Petitioners at 40-41 (quoting Senate Judiciary Committee's Report No. 91-1246 (1970)) (emphasis added). These statements, when taken in their historical context, simply do not demonstrate a specific congressional intent to affirmatively exclude plants from § 101. Congress's statements regarding the lack of general patent protection for plants only reflect the then-common view that living matter was not patentable under § 101. The *Chakrabarty* decision rejected this view, however.[4]

[4] "There is consensus that simultaneous protection is available for plant cultivars that are both certifiable under the PVPA and patentable under U.S. utility patent statutes." Sidney B. Williams, Jr. and Kenneth A. Weber, *Intellectual Property Protection and Plants, in Intellectual Property Rights Associated with Plants*, ASA Special Publication Number 52:91-107 (1989).

Given the prevailing views at the time of their enactment, the PPA and the PVPA should be considered as remedial statutes as opposed to specific legislation that is hostile to the broad scope of § 101. In any event, statements in Committee reports offered in support of remedial legislation cannot and do not amount to specific repeal or preemption of previously enacted statutes.

The only legislative material that explicitly speaks to the patentability of plants under § 101 contradicts Petitioners' argument and demonstrates that Congress understands and intends that § 101 encompasses plant inventions. Specifically, 35 U.S.C. § 119(f) (Supp. V 1999) was amended in 1999 to permit applicants for patents for plant inventions under § 101 ("utility patents") to claim priority to plant breeder's rights obtained in certain foreign countries. The relevant legislative history states that § 119 was amended because, under the prior law, patent applicants were "unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant or utility patent protection for a plant variety in this country." *See*, Intellectual Property and Communications Omnibus Reform Act of 1999, H. R. Conf. Rep. No. 106-464, § 4802 at 145-146 (1999) (App. A at 15a). Thus, Congress clearly amended § 119 to *facilitate* the patenting of plant inventions under § 101.

Although Petitioners rely heavily on inferences drawn from the legislative histories of the PVPA and the PPA, they dismiss the relevance of the recent amendment to § 119(f). Petitioners liken this amendment to an "isolated amendment tacked on the end of a lengthy, multi-subject revenue bill." *See* Brief for Petitioners at 26. This analogy is incorrect.[5]

[5] Petitioners apparently have looked only to the Consolidated Appropriations Act of 2000, Pub. L. 106-113, Nov. 29, 1999, 113 Stat. 1501A-589, § 4802, and did not review the actual legislative history for the amendment to § 119(f) found in the Conference Report cited above.

As noted above, the amendment of § 119(f) represents substantive legislation with the defined objective of facilitating the very thing that Petitioners seek to foreclose-patents for plant inventions under § 101. Furthermore, the amendment of § 119(f) was part of a larger reform act entitled "Intellectual Property and Communications Omnibus Reform Act of 1999." Thus, Petitioners are incorrect when they characterize this Act as merely a "revenue bill."

Petitioners are essentially asking the Court to deny patent coverage under § 101 to plant inventions on the theory that enactment of the PPA and PVPA implicitly excluded such inventions from the scope of § 101. One cannot accept this argument, however, without thwarting the clear intention of Congress to the contrary, as set forth in its most recent (and only explicit) comment on the issue.

D. Plant Patents under the PPA and Certificates under the PVPA do not Conflict with Plant Utility Patents Under § 101

Petitioners argue that permitting patents for plant inventions under § 101 while also allowing protection under the plant-specific acts would result in a conflict in the laws due to an impermissible "dual protection" of the same invention. *See* Brief for Petitioners at 43. This position is not shared by the PTO (which issued the patents in suit), by Congress (as is clear from the legislative history of the recent amendments to § 119(f) (Supp. V 1999)), or by the U.S. Department of Agriculture (which issues PVPA certificates).[6]

Neither party has brought this important legislative history to the Court's attention.

[6] The web site of the Plant Variety Protection Office (of the U.S.D.A.) states that "a plant variety can also receive double protection under a utility patent and plant variety protection." (App. B at 23a; *http://www.ams.usda.gov/science/pvpo/pvp.htm*, General Information, "How is protection of the variety enforced.")

Petitioners argue that impermissible dual protection conflicts arise where "each federal statute purports to protect the same commercially valuable attribute(s) of a thing." *Id.* at 44-45. Notably, no direct legal authority is presented in support of this argument. Moreover, settled precedent establishes that "dual protection" can and does exist.

As a matter of legal construction, the PVPA, the PPA and the utility patent statutes are drawn to achieve different, though somewhat similar, ends. Consequently, there are some things that are protectable in one regime that are not protectable in another. In other words, these statutes do not protect the same commercially valuable attributes.

For example, the PVPA provides limited exclusive rights to the breeder of any sexually reproduced or tuber propagated plant varieties that are new, distinct, uniform and stable. *See* 7 U.S.C. § 2402 (1994 and Supp. II 1996). The limitation of PVPA certificates to plant *varieties* does not cover the much broader class of all sexually reproduced and/or tuber propagated plants. *See* 7 U.S.C. § 2401 (1994) (defining plant variety). PVPA certificates are generally easier to obtain than utility patents because the relevant statutory requirements and agency review processes are less rigorous. Also, a PVPA certificate provides less protection to the inventor than would a § 101 patent, for example, because the certificates permit both a crop planting exemption (usually called a farmer's exception) and a research exemption. *See* 7 U.S.C. §§ 2541(d)-(e), 2543, 2544 (1994). PVPA certificates also need only describe the plant as completely as is "reasonably necessary" under 7 U.S.C. § 2422 (1994), a standard that is considered to be lower than that required for utility patents under 35 U.S.C. § 112 ¶1 (1994). The PVPA does not reach non-sexually reproduced, non-tuber propagated plants. *See* 7 U.S.C. § 2402 (1994 and Supp. II 1996).

A plant patent under § 161 of the PPA is available to whoever invents, or discovers and asexually reproduces, any distinct and new variety of plant. *See* 35 U.S.C. § 161 (1994) (excluding tuber-propagated plants or plants found in an uncultivated state). Unlike the more rigorous description requirements necessary to obtain a utility patent, the description of a plant under the PPA (like that required for PVPA certificates) needs to be only as complete as is reasonably possible. *See* 35 U.S.C. § 162 (1994). The enforceable rights under a PPA patent are relatively narrow. First, the "right to exclude" only applies to asexual, as opposed to sexual production, of plants. *See* 35 U.S.C. § 163 (1994 and Supp. IV 1998). Second, the right to exclude is strictly limited to reproduction from the very plant upon which the PPA patent was issued and its asexually reproduced progeny. *See Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560 (Fed. Cir. 1995) (holding that PPA patents do not otherwise reach plants with the same essential characteristics as the patented plant).

To receive a utility patent on a plant invention under § 101, the plant invention must be new, useful and nonobvious. *See* 35 U.S.C. §§ 101-103 (1994, Supp. I 1995 and Supp. V 1999). Utility patents are not limited to plant varieties or to any particular plant reproductive process, have no farmer's exemption and no research exemption for the development of new cultivars. The scope of protection accorded by a utility patent is, therefore, *broader* than that accorded by PVPA certificates or plant patents. Thus, contrary to Petitioners' argument, utility patents, PPA patents and PVPA certificates have different requirements to obtain benefit of their respective protections and provide different rights against infringers.

Petitioners' "impermissible dual protection" argument is also in conflict with the settled law regarding overlapping intellectual property regimes. Specifically, it is commonplace

for the same item to be subject to multiple protection schemes. For example, copyright and design patent protection can all be applied to the same ornamental object. *See, e.g., Kohler Co. v. Moen Inc.*, 12 F.3d 632, 638-39 (7th Cir. 1993) (rejecting argument that trademark and design patent protection are incompatible); *Pioneer Hi-Bred Int'l, Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374, 1378 (Fed. Cir. 2000) (Pet. App. at 9) (noting that copyright and design patent protection are available for same ornamental object) *cert. granted*, 121 S.Ct. 1077 (U.S. Feb. 20, 2001); *see also Mazer v. Stein*, 347 U.S. 201, 215-218 (1954) (rejecting argument that existence of design patent protection precluded copyright protection for lamps fashioned from statuettes). Similarly, overlapping mask work and utility patent protection are available for semiconductor chip designs. *See, e.g., Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1562-63 (Fed. Cir. 1993). Of course, as with the plant protection schemes discussed above, the particular requirements for each regime vary, as do the accorded rights. The mere existence of multiple regimes does not present an impermissible conflict, however, because the patent or certificate holder is always limited to the specific rights available through compliance with the different protection schemes.

Petitioners also rely on the Court's recent decision in *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 121 S.Ct. 1255 (U.S. March 20, 2001). *Traffix* did not turn on the issue of whether "dual protection" schemes were permissible or not. Rather, in *Traffix*, the Court held that trade dress protection, which can only cover non-functional subject matter, was unavailable where the article in question was clearly functional. *Id.* at 1263. As evidence that the article was functional, the Court noted that the same article was covered by a utility patent, which by explicit statutory requirements can only be granted for *useful* inventions. *Id.* at 1260-61. In other words, because the article in question met

the utility requirement for patentability, it could not simultaneously be non-functional as required for eligibility for trade dress protection. *Id.* at 1263 (but not resolving whether rule would be *per se*).

Nothing in the Court's decision in *Traffix* supports Petitioners' theory that the statutory requirements of § 101 must be construed in a manner to prevent the potential for overlap with the PPA and the PVPA. A logical inability to simultaneously meet the statutory requirements for two specific intellectual property protection regimes in a particular trade dress case is not the same thing as a fatal conflict between all possible dual protection regimes. *Traffix* does not suggest, for example, that trade dress protection and design patent protection are irreconcilable or that one cannot possess rights under both regimes.

Petitioners also rely upon the appellate decision in *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976). In *Ropat*, the court of appeals held that a design patent was invalid under the judicially-created rule against double patenting in light of an earlier filed utility patent covering the same invention. *Id.* at 380, 383. Clearly, *Ropat* does not support the broad proposition that design patents and utility patents under § 101 cannot be issued on the same device. *Id.* at 381 ("The patent laws, of course, provide that a design patent and a utility patent may well be issued on the same construction."). In any event, the possibility of obviating double patenting with a terminal disclaimer (*i.e.*, waiving all patent term coverage for the later issued patent that extends beyond the expiration date of the first patent) further shows that the limitations of double patenting do not mandate that dual protection schemes cannot exist. Indeed, the court in *Ropat* specifically noted that the patentee had failed to obtain a terminal disclaimer. *Id.* at 379 n.1. The reasonable conclusion to be drawn from *Ropat* is that dual protection regimes

can exist, although the patent term of those rights may be limited by the particular requirements of the patent system.

The principle underlying Petitioners' dual protection argument, if adopted by the Court, will have significant adverse effects in several areas of intellectual property law that were long thought settled. Specifically, any intellectual property right owner with overlapping coverage under more than one regime will have to consider the risk that those rights will be challenged in a manner similar to the attack currently leveled by Petitioners. Thus, Petitioners' dual protection attack not only subverts the express will of Congress regarding the patent system, it would also create legal uncertainty in almost all areas of intellectual property law where overlapping rights have previously existed. This approach is at odds with the current legal practice of permitting overlapping property rights.

CONCLUSION

The judgment of the Federal Circuit should be affirmed.

Respectfully submitted,

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APPENDICES

APPENDIX A

HOUSE OF REPRESENTATIVES

106TH CONGRESS
1st Session

Report
106-464

INTELLECTUAL PROPERTY AND COMMUNICATIONS OMNIBUS REFORM ACT OF 1999

NOVEMBER 9, 1999.—Ordered to be printed

Mr. TAUZIN, from the committee of conference, submitted the following

CONFERENCE REPORT

(To accompany H.R. 1554]

The committee of conference on the disagreeing votes of the two Houses on the amendment of the Senate to the bill (H.R. 1554), to amend the provisions of title 17, United States Code, and the Communications Act of 1934, relating to copyright licensing and carriage of broadcast signals by satellite, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

That the House recede from its disagreement to the amendment of the Senate and agree to the same with an amendment as follows:

In lieu of the matter proposed to be inserted by the Senate amendment, insert the following:

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Intellectual Property and Communications Omnibus Reform Act of 1999".

(b) TABLE OF CONTENTS.—The table of contents of this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—SATELLITE HOME VIEWER IMPROVEMENT

Sec. 1001. Short title.
Sec. 1002. Limitations an exclusive rights; secondary transmissions by satellite carriers within local markets.
Sec. 1003. Extension of effect of amendments to section 119 of title 17, United States Code.
Sec. 1004. Computation of royalty fees for satellite carriers.
Sec. 1005. Distant signal eligibility far consumers.
Sec. 1006. Public broadcasting service satellite feed.
Sec. 1007. Application of Federal communications commission regulations.
Sec. 1008. Rules for satellite carriers retransmitting television broadcast signals.

Sec. 1009. Retransmission consent.
Sec. 1010. Severability.
Sec. 1011. Technical amendments.
Sec. 1012. Effective dates.

TITLE II—RURAL LOCAL TELEVISION SIGNALS

Sec. 2001. Short title.
Sec. 2002. Loan guarantees.
Sec. 2003. Administration of loan guarantees.
Sec. 2004. Retransmission of local television broadcast stations.
Sec. 2005. Local television service in unserved and underserved markets.
Sec. 2006. Definitions.

TITLE III—TRADEMARK CYBERPIRACY PREVENTION

Sec. 3001. Short title; references.
Sec. 3002. Cyberpiracy prevention.
Sec. 3003. Damages and remedies.
Sec. 3004. Limitation on liability.
Sec. 3005. Definitions.
Sec. 3006. Study on abusive domain name registrations involving personal names.
Sec. 3007. Historic preservation.
Sec. 3008. Savings clause.
Sec. 3009. Technical and conforming amendments.
Sec. 3010. Effective date.

TITLE IV—INVENTOR PROTECTION

Sec. 4001. Short title.

Subtitle A—Inventors' Rights

Sec. 4101. Short title.
Sec. 4102. Integrity in invention promotion services.
Sec. 4103. Effective date.

Subtitle B—Patent and Trademark Fee Fairness

Sec. 4201. Short title.
Sec. 4202. Adjustment of patent fees.
Sec. 4203. Adjustment of trademark fees.
Sec. 4204. Study on alternative fee structures.
Sec. 4205. Patent and Trademark Office Funding.
Sec. 4206. Effective date.

Subtitle C—First Inventor Defense

Sec. 4301. Short title.
Sec. 4302. Defense to patent infringement based on earlier inventor.
Sec. 4303. Effective date and applicability.

Subtitle D—Patent Term Guarantee

Sec. 4401. Short title.
Sec. 4402. Patent term guarantee authority.
Sec. 4403. Continued examination of patent applications.
Sec. 4404. Technical clarification.
Sec. 4405. Effective date.

Subtitle E—Domestic Publication of Patent Applications Published Abroad

Sec. 4501. Short title.
Sec. 4502. Publication.
Sec. 4503. Time for claiming benefit of earlier filing date.
Sec. 4504. Provisional rights.
Sec. 4505. Prior art effect of published applications.
Sec. 4506. Cost recovery for publication.
Sec. 4507. Conforming amendments.
Sec. 4508. Effective date.

Subtitle F—Optional Inter Partes Reexamination Procedure

Sec. 4601. Short title.
Sec. 4602. Ex parte reexamination of patents.

[Page 3]

Sec. 4603. Definitions.
Sec. 4604. Optional inter partes reexamination procedures.
Sec. 4605. Conforming amendments.
Sec. 4606. Report to Congress.
Sec. 4607. Estoppel effect of reexamination.
Sec. 4608. Effective date.

Subtitle G—Patent and Trademark Office

Sec. 4701. Short title.

CHAPTER 1—UNITED STATES PATENT AND TRADEMARK OFFICE

Sec. 4711. Establishment of Patent and Trademark Office.
Sec. 4712. Powers and duties.
Sec. 4713. Organization and management.
Sec. 4714. Public advisory committees.
Sec. 4715. Conforming amendments.
Sec. 4716. Trademark Trial and Appeal Board.
Sec. 4717. Board of Patent Appeals and Interferences.
Sec. 4718. Annual report of Director.
Sec. 4719. Suspension or exclusion from practice.
Sec. 4720. Pay of Director and Deputy Director.

CHAPTER 2—EFFECTIVE DATE; TECHNICAL AMENDMENTS

Sec. 4731. Effective date.
Sec. 4732. Technical and conforming amendments.

CHAPTER 3—MISCELLANEOUS PROVISIONS

Sec. 4741. References.
Sec. 4742. Exercise of authorities.
Sec. 4743. Savings provisions.
Sec. 4744. Transfer of assets.
Sec. 4745. Delegation and assignment.
Sec. 4746. Authority of director of the Office of Management and Budget with respect to functions transferred.
Sec. 4747. Certain vesting of functions considered transfers.
Sec. 4748. Availability of existing funds.
Sec. 4749. Definitions.

Subtitle H—Miscellaneous Patent Provisions

Sec. 4801. Provisional applications.
Sec. 4802. International applications.
Sec. 4803. Certain limitations on damages for patent infringement not applicable.

Sec. 4804. Electronic filing and publications.
Sec. 4805. Study and report on biological deposits in support of biotechnology patents.
Sec. 4806. Prior invention.
Sec. 4807. Prior art exclusion for certain commonly assigned patents.
Sec. 4808. Exchange of copies of patents with foreign countries.

TITLE V—MISCELLANEOUS PROVISIONS

Sec. 5001. Commission on online child protection.
Sec. 5002. Privacy protection for donors to public broadcasting entities.
Sec. 5003. Completion of biennial regulatory review.
Sec. 5004. Public broadcasting entities.
Sec. 5005. Technical amendments relating to vessel hull design protection.
Sec. 5006. Informal rulemaking of copyright determination.
Sec. 5007. Service of process for surety corporations.
Sec. 5008. Low-power television.

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[Pages 4 to 78 of Conference Report intentionally omitted.]

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[Page 79]

SEC. 4746. AUTHORITY OF DIRECTOR OF THE OFFICE OF MANAGEMENT AND BUDGET WITH RESPECT TO FUNCTIONS TRANSFERRED.

(a) DETERMINATIONS.—If necessary, the Director of the Office of Management and Budget shall make any determination of the functions that are transferred under this subtitle.

(b) INCIDENTAL TRANSFERS.—The Director of the Office of Management and Budget, at such time or times as the

Director shall provide, may make such determinations as may be necessary with regard to the functions transferred by this subtitle, and to make such additional incidental dispositions of personnel, assets, liabilities grants contracts, property, records, and unexpended balances of appropriations, authorizations, allocations, and other funds held, used, arising from, available to, or to be made available in connection with such functions, as may be necessary to carry out the provisions of this subtitle. The Director shall provide for the termination of the affairs of all entities terminated by this subtitle and for such further measures and dispositions as may be necessary to effectuate the purposes of this subtitle.

SEC. 4747. CERTAIN VESTING OF FUNCTIONS CONSIDERED TRANSFERS.

For purposes of this subtitle, the vesting of a function in a department or office pursuant to reestablishment of an office shall be considered to be the transfer of the function.

SEC. 4748. AVAILABILITY OF EXISTING FUNDS.

Existing appropriations and funds available for the performance of functions, programs, and activities terminated pursuant to this subtitle shall remain available, for the duration of their period of availability, for necessary expenses in connection with the termination and resolution of such functions, programs, and activities, subject to the submission of a plan to the Committees on Appropriations of the House and Senate in accordance with the procedures set forth in section 605 of the Departments of Commerce, Justice and State, the Judiciary, and Related Agencies Appropriations Act 1999, as contained in Public Law 105-277.

SEC. 4749. DEFINITIONS.

For purposes of this subtitle—

(1) the term "function" includes any duty, obligation, power, authority, responsibility, right, privilege, activity, or program; and

(2) the term "office" includes any office, administration, agency, bureau, institute, council, unit, organizational entity or component thereof.

Subtitle H—Miscellaneous Patent Provisions

SEC. 4801. PROVISIONAL APPLICATIONS.

(a) ABANDONMENT.—Section 111(b)(5) of title 35 United States Code, is amended to read as follows:

"(5) ABANDONMENT.—Notwithstanding the absence of a claim, upon timely request and as prescribed by the Director, a [Page 80] *provisional application may be treated as an application filed under subsection (a). Subject to section 119(e)(3) of this title, if no such request is made, the provisional application shall be regarded as abandoned 12 months after the filing date of such application and shall not be subject to revival after such 12-month period.".*

(b) TECHNICAL AMENDMENT RELATING TO WEEKENDS AND HOLIDAYS.—Section 119(e) of title 35, United States Code, is amended by adding at the end the following:

"(3) If the day that is 12 months after the filing date of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, the period of pendency of the provisional application shall be extended to the next succeeding secular or business day."

(c) ELIMINATION OF COPENDENCY REQUIREMENT.—Section 119(e)(2) of title 35, United States Code, is amended by striking "and the provisional application was pending on the filing date of the application for patent under section 111(a) or section 363 of this title".

(d) EFFECTIVE DATE.—The amendments made by this section shall take effect on the date of enactment of this Act and shall apply to any provisional application filed on or

after June 8, 1995, except that the amendments made by subsections (b) and (c) shall have no effect with respect to any patent which is the subject of litigation in an action commenced before such date of enactment.

SEC. 4802. INTERNATIONAL APPLICATIONS.

Section 119 of title 35, United States Code, is amended as follows:

(1) In subsection (a), insert "or in a WTO member country," after "or citizens of the United States,".

(2) At the end of section 119 add the following new sub-sections:

"(f) Applications for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents.

"(g) As used in this section—

"(1) the term 'WTO member country' has the same meaning as the term is defined in section 104(b)(2) of this title; and

"(2) the term 'UPOV Contracting Party' means a member of the International Convention for the Protection of New Varieties of Plants.".

SEC. 4803. CERTAIN LIMITATIONS ON DAMAGES FOR PATENT INFRINGEMENT NOT APPLICABLE.

Section 287(c)(4) of title 35, United States Code, is amended by striking "before the date of enactment of this subsection " and inserting "based on an application the earliest effective filing date of which is prior to September 30, 1996".

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SEC. 4804. ELECTRONIC FILING AND PUBLICATIONS.

(a) PRINTING OF PAPERS FILED.—Section 22 of title 35, United States Code, is amended by striking "printed or typewritten and inserting "printed, typewritten, or on an electronic medium".

(b) PUBLICATIONS.—Section 11(a) of title 35, United States Code, is amended by amending the matter preceding paragraph 1 to read as follows:

"(a) The Director may publish in printed, typewritten, or electronic form, the following:".

(c) COPIES OF PATENTS FOR PUBLIC LIBRARIES.—Section 13 of title 35, United States Code, is amended by striking "printed copies of specifications and drawings of patents" and inserting "copies of specifications and drawings of patents in printed or electronic form".

(d) MAINTENANCE OF COLLECTIONS.—

(1) ELECTRONIC COLLECTIONS.—Section 41(i)(1) of title 35, United States Code, is amended by striking "paper or microform" and inserting "paper, microform, or electronic".

(2) Continuation of maintenance.—The Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office shall not, pursuant to the amendment made by paragraph (1), cease to maintain, for use by the public, paper or microform collections of United States patents, foreign patent documents, and United States trademark registrations, except pursuant to notice and opportunity for public comment and except that the Director shall first submit a report to the Committees on the Judiciary of the Senate and the House of Representatives detailing such plan, including a description of the mechanisms in

place to ensure the integrity of such collections and the data contained therein, as well as to ensure prompt public access to the most current available information, and certifying that the implementation of such plan will not negatively impact the public.

SEC. 4805. STUDY AND REPORT ON BIOLOGICAL DEPOSITS IN SUPPORT OF BIOTECHNOLOGY PATENTS.

(a) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Comptroller General of the United States, in consultation with the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, shall conduct a study and submit a report to Congress on the potential risks to the United States biotechnology industry relating to biological deposits in support of biotechnology patents.

(b) CONTENTS.—The study conducted under this section shall include—

(1) an examination of the risk of export and the risk of transfers to third parties of biological deposits, and the risks posed by the change to 18-month publication requirements made by this subtitle;

(2) an analysis of comparative legal and regulatory regimes; and

(3) any related recommendations.

(c) CONSIDERATION OF REPORT.—In drafting regulations affecting biological deposits (including any modification of title 37, Code of Federal Regulations, section 1.801 et seq.), the United States Pat-[Page 82]*-ent and Trademark Office shall consider the recommendations of the study conducted under this section.*

SEC. 4806. PRIOR INVENTION.

Section 102(g) of title 35, United States Code, is amended to read as follows:

"(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.".

SEC. 4807. PRIOR ART EXCLUSION FOR CERTAIN COMMONLY ASSIGNED PATENTS.

(a) Prior Art Exclusion.—Section 103(c) of title 35, United States Code, is amended by striking "subsection (f) or (g)" and inserting "one or more of subsections (e), (f), and (g)".

(b) EFFECTIVE DATE.—The amendment made by this section shall apply to any application for patent filed on or after the date of enactment of this Act.

SEC. 4808. EXCHANGE OF COPIES OF PATENTS WITH FOREIGN COUNTRIES.

Section 12 of title 35, United States Code, is amended by adding at the end the following: "The Director shall not enter into an agreement to provide such copies of specifications and drawings of United States patents and applications to a foreign country, other than a NAFTA country or a WTO member country, without the express authorization of the Secretary of Commerce. For purposes of this section, the terms 'NAFTA country' and WTO member country' have the meanings given those terms in section 104(b).".

TITLE V—MISCELLANEOUS PROVISIONS

SEC. 5001. COMMISSION ON ONLINE CHILD PROTECTION.

(a) REFERENCES.—Wherever in this section an amendment is expressed in terms of an amendment to any provision, the reference shall be considered to be made to such provision of section 1405 of the Child Online Protection Act (47 U.S.C. 231 note).

(b) MEMBERSHIP.—Subsection (b) is amended—

(1) by striking paragraph (1) and inserting the following new paragraph:

"(1) INDUSTRY MEMBERS.—The Commission shall include 16 members who shall consist of representatives of—

"(A) providers of Internet filtering or blocking services or software;

"(B) Internet access services;

"(C) labeling or ratings services;

"(D) Internet portal or search services;

* * * *

[Pages 83 to 144 of Conference Report intentionally omitted]

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SUBTITLE H—MISCELLANEOUS PATENT PROVISIONS

Subtitle H consists of seven largely-unrelated provisions that make needed clarifying and technical changes to the Patent Act. Subtitle H also authorizes a study. The provisions in Subtitle H take effect on the date of enactment except where stated otherwise in certain sections.

Sec. 4801. Provisional applications

Section 4801 amends section 111(b)(5) of the Patent Act by permitting a provisional application to be converted into a non-provisional application. The applicant must make a request within 12 months after the filing date of the provisional application for it to be converted into a non-provisional application.

Section 4801 also amends section 119(e) of the Patent Act by clarifying the treatment of a provisional application when its last day of pendency falls on a weekend or a Federal holiday, and by eliminating the requirement that a provisional application must be co-pending with a non-provisional application if the provisional application is to be relied on in any USPTO proceeding.

Sec. 4802. International applications

Section 4802 amends section 119(a) of the Patent Act to permit persons who filed an application for patent first in a WTO [24] member country to claim the right of priority in a subsequent patent application filed in the United States, even if such country does not yet afford similar privileges on the basis of applications filed in the United States. This amendment was made in conformity with the requirements of Articles 1 and 2 of the TRIPS Agreement.[25] These Articles

[24] World Trade Organization. The agreement establishing the WTO is a multilateral instrument which creates a permanent organization to oversee the implementation of the Uruguay Round Agreements, including the GATT 1994. to provide a forum for multilateral trade negotiations and to administer dispute settlements (*see* note 3, *supra*). Staff of the House Comm. on Ways and Means, 104th cong., 1st Sess., Overview and Compilation of U.S. Trade Statutes 1040 (Comm. Print 1995) [hereinafter, Overview and Compilation of U.S. Trade Statutes].

[25] Trade-Related Aspects of Intellectual Property Rights Agreement; *i.e.*, that component of GATT which addresses intellectual property rights among the signatory members.

require that WTO member countries apply the substantive provisions of the Paris Convention for the Protection of Industrial Property to other WTO member countries. As some WTO member countries are not yet members of the Paris Convention and as developing countries are generally permitted periods of up to 5 years before complying with all provisions of the TRIPS Agreement, they are not required to extend the right of priority to other WTO member countries until such time.

Section 4802 also adds subsection (f) to section 119 of the Patent Act to provide for the right of priority in the United States on the basis of an application for a plant breeder's right first filed in a WTO member country or in a UPOV[26] Contracting Party. Many foreign countries provide only a sui generis system of protection for plant varieties. Because section 119 presently addresses only pat-[Page 146]-ents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility pat-exit protection for a plant variety in this country.

Subsection (g) is added to section 119 to define the terms "WTO member country" and "UPOV Contracting Party."

Sec. 4803. Certain limitations on remedies for patent infringement not applicable

Section 4803 amends section 287(c)(4) of the Patent Act, which pertains to certain limitations on remedies for patent

[26] International Convention for the Protection of New Varieties of Plants. UPOV is administered by the World Intellectual Property Organization (WIPO), which is charged with the administration of, and activities concerning revisions to, the international intellectual property treaties. UPOV has 40 members, and guarantees plant breeders national treatment and right of priority in other countries that are members of the treaty, along with certain other benefits. *See* MA. Leaffer, International Treaties on Intellectual Property at 47 (SNA, 2d ad. 1997).

infringement, to make it applicable only to applications filed on or after September 30, 1996.

Sec. 4804. Electronic filing and publications

Section 4804 amends section 22 of the Patent Act to clarify that the USPTO may receive, disseminate, and maintain information in electronic form. Subsection (d)(2), however, prohibits the Director from ceasing to maintain paper or microform collections of U.S. patents, foreign patent documents, and U.S. trademark registrations, except pursuant to notice and opportunity for public comment and except the Director shall first submit a report to Congress detailing any such plan, including a description of the mechanisms in place to ensure the integrity of such collections and the data contained therein, as well as to ensure prompt public access to the most current available information, and certifying that the implementation of such plan will not negatively impact the public.

In addition, in the operation of its information dissemination programs and as the sole source of patent data, the USPTO should implement procedures that assure that bulk patent data are provided in such a manner that subscribers have the data in a manner that grants a sufficient amount of time for such subscribers to make the data available through their own systems at the same time the USPTO makes the data publicly available through its own Internet system.

Sec. 4805. Study and report on biologic deposits in support of biotechnology patents

Section 4805 charges the Comptroller General, in consultation with the Director of the USPTO, with conducting a study and submitting a report to Congress no later than six months after the date of enactment on the potential risks to the U.S. biotechnological industry regarding biological deposits in support of biotechnology patents. The study shall include: an examination of the risk of export and of transfers to third parties of biological deposits, and the risks posed by

the 18-month publication requirement of subtitle E; an analysis of comparative legal and regulatory regimes; and any related recommendations. The USPTO is then charged with considering these recommendations when drafting regulations affecting biological deposits.

Sec. 4806. Prior invention

Section 4806 amends section 102(g) of the Patent Act to make clear that an inventor who is involved in a USPTO interference [page 147] proceeding and establishes a date of invention under section 104 is subject to the requirements of section 102(g), including the requirement that the invention was not abandoned, suppressed, or concealed.

Sec. 4807. Prior art exclusion for certain commonly assigned patents

Section 4807 amends section 103 of the Patent Act, which sets forth patentability conditions related to the nonobviousness of subject matter. Section 103(c) of the current statute states that subject matter developed by another person which qualifies as prior art only under section 102(f) or (g) shall not preclude granting a patent on an invention with only obvious differences where the subject matter and claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. The bill amends section 103(c) by adding a reference to section 102(e), which currently bars the granting of a patent if the invention was described in another patent granted on an application filed before the applicant's date of invention. The effect of the amendment is to allow an applicant to receive a patent when an invention with only obvious differences from the applicant's invention was described in a patent granted on an application filed before the applicant's invention, provided the inventions are commonly owned or subject to an obligation of assignment to the same person.

Sec. 4808. Exchange of copies of patents with foreign countries

Sec. 4808 amends section 12 of the Patent Act to prohibit the Director of the USPTO from entering into an agreement to exchange patent data with a foreign country that is not one of our NAFTA [27] or WTO trading partners, unless the Secretary of Commerce explicitly authorizes such an exchange.

TITLE V—MISCELLANEOUS PROVISIONS

Sec. 5001. Commission on Online Child Protection

Section 5001(a) provides that references contained in the amendments made by this title are to section 1405 of the Child On-line Protection Act (47 U.S.C. 231 note).

Section 5001(b) amends the membership of the Commission on Online Child Protection to remove a requirement that a specific number of representatives come from designated sectors of private industry, as outlined in the Act. Section 5001(b) also provides that the members appointed to the Commission as of October 31, 1999 shall remain as members. Section 5001(b) also prevents the members of the Commission from being paid for their work on the Commission. This provision, however, does not preclude members from being reimbursed for legitimate costs associated with participating in the Commission (such as travel expenses).

Section 5001(c) extends the due date for the report of the Commission by one year.

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[Pages 148 to 155 of Conference Report intentionally omitted.]

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[27] North American Free Trade Agreement, Pub. L. No. 103-182. The cornerstone of NAFTA is the phased-out elimination of all tariffs on trade between the U.S., Canada, and Mexico. Overview and Compilation of U.S. Trade Statutes 1999.

APPENDIX B

www.ams.usda.gov/science/pvpo/pvp/htm

AMS **Science and Technology Programs**

Plant Variety Protection Office

Mission

The Plant Variety Protection Office administers the Plant Variety Protection Act, by issuing Certificates of Protection in a timely manner. The Act provides legal intellectual property rights protection to developers of new varieties of plants which are sexually reproduced (by seed) or tuber-propagated.

General Information

- What is Plant Variety Protection? (PVP)
- Who may apply for PVP?
- How is protection obtained?
- What is the total cost of protection?
- What actions are people prohibited from taking with a protected variety?
- What exemptions are there to the protection provided?
- The Plant Variety Protection Act (PVPA)
- Application Requirements
- Forms and Instructions
- PVP Application/Certificate Status Database
- Contacts
- Other Links of Interest for PVPO Viewers
- PVPO News Release
- PVPO Current News

[6/11/2001 9:49 AM]

What is Plant Variety Protection (PVP)?

The Plant Variety Protection Act (PVPA), enacted in December of 1970, and amended in 1994, provides legal intellectual property rights protection, to developers of new varieties of plants that are sexually reproduced (by seed) or are tuber-propagated. Bacteria and fungi are excluded. The PVPA is administered by the United States Department of Agriculture.

A Certificate of Protection is awarded to an owner of a variety after an examination shows that it is new, distinct from other varieties, and genetically uniform and stable through successive generations.

The term of protection is 20 years for most crops and 25 years for trees, shrubs, and vines. The owner of a U.S. protected variety has exclusive rights to multiply and market the seed of that variety.

Who benefits from PVP?

The public benefits as the recipient of quality food, feed, fiber, and other products that result directly from improved plant varieties. Growers of food and ornamental, industrial, or medicinal crops benefit when higher quality varieties are available. Plant Variety Protection allows owners of new varieties to maintain control over the purity and the marketing of the variety. Such protection helps companies or individuals spending time and money developing a variety to obtain a return on their investment.

Who may apply for PVP?

Anyone who is the owner, breeder, developer, or discoverer of a unique cultivator of a sexually reproduced or tuber-propagated plant may apply for Plant Variety Protection. This applies to citizens of the United States, as well as citizens of countries that are members of the International Union for the Protection of New Varieties of Plants (UPOV). The applicant may be an individual, a public institution, or a corporation.

What if I've already sold seed of my variety but would still like to have it protected?

As long as you have not sold seed of the variety, offered or advertised it for sale for more than 1 year in the United States, prior to the date your application is filed in the Plant Variety Protection Office, your variety is still eligible for protection. You have more than one year of eligibility if the variety has only been sold in a foreign country. Ordinarily that time would be 4 years, and 6 years for a tree or vine.

How is protection obtained?

The Plant Variety Protection Office will provide application forms for protection of a plant variety with instructions on how to file applications. To obtain an Application by mail, please send an inquiry via the Webmaster, or mail written inquiries to:

Plant Variety Protection Office
National Agricultural Library, Room 500
10301 Baltimore Boulevard
Beltsville, MD 20705-2351

Phone: 301-504-5518
Fax: 301-504-5291
E-Mail: Webmaster. Plant Variety Protection Office

Please include a complete mailing address with all inquiries.

What is the total cost of protection?

The total cost of protection is $3,025. This price includes $2,705 for the application and examination; and the certificate fee of $320, upon issuance of the certificate. These fees are subject to change.

What protection do I obtain?

Without explicit consent from the owner, a person is prohibited from selling marketing, offering[,] delivering,

consigning, exchanging, or exposing the variety for sale. In addition, a person is prohibited from soliciting an offer to buy the variety, transfer, or possess it in any manner. It is also illegal to import or export the variety, sexually multiply it, propagate it by tuber, use the variety in producing (as distinguished from developing) a hybrid, or condition the variety for the purpose of propagation.

Does this mean that the home gardener or farmer cannot propagate the seed of a protected variety and save it for future planting?

No. Growers and home gardeners can grow any legally purchased and protected variety they wish. They can collect and save the seed for future planting on their own holdings without violation of the law.

What exemptions are there to the protection provided?

In general, there are two exemptions to the protection provided.

1. A research exemption to allow the use for breeding to develop a new variety; and
2. A farmer's exemption to allow the saving of seed for the sole use of replanting the farmer's land. Neither plant patents nor utility patents provide these exemptions.

How is protection of the variety enforced?

The owner of a protected variety may bring civil action against persons infringing on his or her rights. The owner may ask a court to issue an injunction to prevent others from further violations. It is the owner of the protected variety who must bring suit in such cases. USDA will not take that action. In the USA, intellectual property protection for plants is provided through plant patents, plant variety protection an[d] utility patents. Plant patents provide protection for asexually reproduced (by vegetation) varieties excluding tubers. Plant

variety protection provides protection for sexually (by seed) reproduced varieties including tubers, F_1 hybrids, and essentially derived varieties. Utility patents currently offer protection for any plant type or plant parts. A plant variety can also receive double protection under a utility patent and plant variety protection.

For additional information concerning utility and plant patents please contact the Patent and Trademark Office at Patents and Trademarks, Washington, DC, 20231, or their internet web site at: http://www.uspto.gov. Their web site provides answers to frequently asked questions concerning patents, guides to filing utility and plant patent applications, and access to their database.

Application Requirements

- The name or temporary designation of the new variety;
- Proof that the variety is distinct, uniform and stable;
- The pedigree, breeding methods, and selection criteria used in developing the variety;
- A statement of the basis of ownership and explanation of who, including the breeder, has rights to the variety;
- A sample of at least 2,500 of the untreated viable basic seed required to reproduce the variety, or for a tuber-propagated variety, declaration that a viable cell culture will be deposited in a public depository and will be maintained for the duration of the certificate; and
- Filing and examination fees totaling $2,705 payable when the application is submitted.

Crop Specific Requirements: WHEAT (common wheat, durum wheat, club wheat, spelt, *etc*.)

Milling and Baking Data: The legislative history on Public Law 91-577, which included the Plant Variety Protection Act, bears the following wording:

> *"Therefore, it is the committee's intent that the Secretary shall to the maximum extent practicable, provide information concerning the milling and baking characteristics of wheat. It is also the committee's intent that such information be made available to the public and that it include as many processing and product characteristics as is feasible."*

Such data should be put in the Exhibit D.

Proof: Proof of the distinctness, uniformity, arid stability of the new variety lies with the owner.

Distinctness: The applicant may:

1. List the single variety he or she believes is the one most similar to the new variety and describe how the new variety differs from it;
2. List a group of varieties to which the new variety is similar, and describe how it differs from that group; or,
3. Describe how the variety differs from all other known varieties in the crop kind.

Additionally, the PVP Office maintains databases for crops of both public and private varieties. The examiner uses those and other sources to determine which, if any, varieties are indistinguishable from the new one. If the examiner finds varieties that appear to be indistinguishable from the application variety, the applicant will be notified that supplemental data are necessary. To obtain additional data, applicants may perform additional field or greenhouse replications and may use DNA profiling [and] other analyses to substantiate distinctness. The USDA does not perform tests to confirm distinctness of a variety. That responsibility rests with the applicant.

Uniformity: A statement of uniformity must report the level of variability in any characteristic of the variety. Variation which is predictable, describable, and commercially acceptable may be allowed.

Stability: A statement of genetic stability is required, showing the number of cycles of seed reproduction for which the variety has remained unchanged in all distinguishing characteristics.

Description of Contents of a Complete Application and Exhibit Forms

Note: PVP is working on making forms and guidelines available on this website, however they all are not available. Please contact our office for any forms or guidelines that you do not find on our website.

A PVP application consists of a completed and signed Form SD-470 which includes:

1. Exhibits A, B, C, & E (Exhibit D is optional);
   a) Exhibit A (Breeding History)
   b) Exhibit B (Statement of Distinctness)
   c) Exhibit C (Objective Description)
   d) Exhibit D (Additional descriptive Information)
   e) Exhibit E (Statement of Ownership)
2. A sample of at least 2,500 untreated viable seeds capable of propagating the application variety, for a tuber propagated variety a verification that a viable cell culture will be deposited; and,
3. a check drawn on a U.S. bank for the current fee of $2,705.00 (application and examination fee), payable to "Treasure of the United States".

Form SD-470

The applicant is required to give their name, address, representative, the variety's genus, species, and the variety

name, except that a temporary name will suffice until the certificate is issued. The proposed variety name must also be cleared with the Seed Regulatory and Testing Branch to avoid conflicts with other variety names. The Seed Regulatory and Testing Branch may be contacted at:

U.S. Department of Agriculture
Agricultural Marketing Service
Livestock and Seed Programs
Seed Regulatory and Testing Branch
Building 306, Room 213, BARC-East
Beltsville, Maryland 20705-2325

Or contact their web site at http://www.ams.usda.gov/lsg/seed/ls-sd.htm

In addition, the applicant must complete a statement for the basis of the claim that the variety is new. A variety may be considered new only if propagating or harvested material of the variety has not been sold or otherwise disposed of to other persons for purposes of exploitation of the variety for more than 1 year in the U.S. or 4 years outside of the U.S.

Exhibit A—Breeding History

The applicant is required to provide:

1. A full disclosure of the genealogy back to publicly known varieties, lines, or clones, including the breeding method;
2. The details of subsequent stages of selection and multiplication used to develop the variety;
3. A statement of uniformity reporting the level of variability in any characteristics of the variety (commercially acceptable variability is allowed);
4. A statement of genetic stability showing the number of cycles of seed reproduction for which the variety has remained unchanged in all distinguishing characteristics;

5. The type and frequency of variants observed during reproduction arid multiplication; and

See the Guidelines Exhibit A, Origin and Breeding History.

Exhibit B—Statement of Distinctness (Formally Titled " Novelty Statement")

The applicant is required to give a summary of the variety's distinctness, stating clearly how the application variety may be distinguished from all other varieties in the same crop. If the variety is most similar to one variety or group of varieties, the applicant must:

1. Identify these varieties and state all differences objectively;
2. Attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
3. Submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons that clearly indicate distinctness.

See the Guidelines Exhibit B, Statement of Distinctness.

Exhibit C—Objective Description of Variety

The PVP Office has prepared forms for the applicant to provide a botanical description of the variety for most crops. These forms list the botanical characteristics for a kind of crop and the degree of expression of each characteristic. These forms also provide a list of recommended varieties that the applicant should compare to the application variety. The applicant needs to complete the form for his/her variety as thoroughly as possible.

Exhibit D—Optional Supporting Information

The applicant may provide additional information, specimens, and/or materials in support of the claims of the application.

Exhibit E—Statement of Ownership

The applicant is required to furnish a statement for the basis of the applicant's ownership. The PVP Office has prepared a form to simplify this requirement. The form also includes a statement to verify the applicant is eligible to file for PVP in the U.S.

The Plant Variety Protection Act—Federal Regulations

Forms and Instructions

- The Latest Application Form SD-470
- Instruction Page (Available by clicking on Application Form SD-470)
- All Exhibit C Forms
- Exhibit E Form (Available by clicking on Application Form SD-470)
- Guidelines for Exhibit A—Origin and Breeding History
- Guidelines for Exhibit B—Statement of Distinctness

Plant Variety Protection Office Official Journal

Other Links of Interest for PVPO Viewers:

- The Seed Regulatory and Testing Branch
  http://www/ams.usda.gov/lsg/seed/ls-sd. htm
- U.S. Patent and Trademark Office
  http://www.uspto.gov
- Union Internationale Pour La Protection Des Obentions Vegetales
  http://upov.org
- World Seed Industry Organization
  http://worldseed.org
- International Seed Trade Association
  http://seedtest.org
- PVP Application/Certificate Status Database
  http://ww.ars-grin.gov/cgi-bin/npgs/html/pvplist.pl

PVP Crop Description Databases

The PVP crop databases are used to scrutinize the most similar varieties to the application variety and verify the application variety is distinct, These databases contain descriptions of varieties for all PVP applications in the U.S. and the descriptions for all varieties that are publicly known or a matter of common knowledge. A publicly known variety, according to the PVP Act, is "a variety that is adequately described by a publication reasonably considered to be a part of the public technical knowledge in the United States". The PVP Act requires that the description include a disclosure of the principal characteristics by which a variety can be distinguished.

As time permits, the PVP Office is posting a public version of the crop databases. The posted public crop databases do not contain an applicant's description for a variety unless a PVP certificate has been issued for that variety, as they are confidential.

What actions are people prohibited from taking with a protected variety?

Without explicit consent from the owner, a person is prohibited from selling, marketing, offering, delivering, consigning, exchanging, or exposing the variety for sale. In addition, a person is prohibited from soliciting an offer to buy the variety or transfer or possess it in any way. It is also illegal to import or export the variety, sexually multiply it, propagate it by tuber, use the variety in producing (as distinguished from developing) a hybrid, or condition the variety for the purpose of propagation.

Does this mean that the home gardener or farmer cannot propagate the seed of a protected variety and save it for future planting?

No. Growers and home gardeners can grow any legally purchased protected variety they wish. They can collect and save the seed for their own future planting without violation of the law.

How is protection of the variety enforced?

The owner of a protected variety may bring civil action against persons infringing on his or her rights. The owner may ask a court to issue an injunction to prevent others from further violations. It is the owner of the protected variety, however, who must bring suit in such cases. USDA will not take that action.

Current public crop database in a searchable format:

- Lettuce http://www.ars-grin.gov/dbmugs/~pvpo.html

PVPO News Release

PVPO Current News

Effective September 2000—U.S. Plant Variety Protection Office will suspend training in plant variety protection procedures.

The U.S. Plant Variety Protection Office (PVPO) regrets to announce that the Office will suspend offering training programs in Plant Variety Protection (PVP), or in U.S. procedures for examining PVP applications This decision is necessary to provide continued service to PVP applicants.

Requests to PVPO for training programs are becoming more frequent, as a growing number of countries are enacting Plant Breeders' Rights legislation. However, the cost of offering this training is interruption in service to PVP applicants (the PVPO receives no public funds; it is supported 100% by fees paid by PVP applicants).

It is hoped that training and other outreach programs can be resumed and further developed in future. The PVPO will continued to welcome visitors for periods of up to a half day.

For further information contact:

Dr. Thomas Salt, Chair, Visitor's Committee

Plant Variety Protection Office
10301 Baltimore Avenue, Room 500
Beltsville, MD 20705-2351
Phone: 301-504-5518
FAX: 301-504-5291
E-Mail: thomas.salt at usda.gov

For more information on Plant Variety Protection contact:

Plant Variety Protection Office

10301 Baltimore Avenue, Room 500
Beltsville, MD 20705-2351
Phone: 301-504-5518
FAX: 301-504-5291
E-Mail: *Webmaster. Plant Variety Projection Office*

Send comments or suggestions to:

Plant Variety Protection Office

10301 Baltimore Avenue, Room 500
Beltsville, MD 20705-2351
Phone: 301-504-5518
FAX: 301-504-5291
E-Mail: *Webmaster Plant Variety Protection Office*

Science and Technology Homepage

Supreme Court, U.S.
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No. 99-1996

In The

SUPREME COURT OF THE UNITED STATES

J.E.M. AG Supply, Inc.
(doing business as Farm Advantage, Inc.),
Farm Advantage, Inc., Larry Benz,
Merle Pruett (doing business as Siouxland Seeds, Inc.),
Kevin Wolfswunkel, Tim Kamstra, and
Tom Eischen Seed & Chemicals,
Petitioners,

v.

Pioneer Hi-Bred International, Inc.
Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF *AMICUS CURIAE* OF AMERICAN CROP PROTECTION ASSOCIATION IN SUPPORT OF AFFIRMANCE

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QUESTION PRESENTED

Are utility patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants and plant varieties?

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STATEMENT OF INTEREST OF *AMICUS CURIAE*[1]

Amicus American Crop Protection Association ("ACPA") is a not-for-profit trade association organized in 1933. ACPA is the not-for-profit trade organization representing the major manufacturers, formulators and distributors of crop protection and pest control products, including conventional and biotechnology-derived seeds and plants with crop production and protection characteristics. ACPA member companies produce, sell and distribute virtually all the scientific technology products used in crop production by American farmers. Annually, ACPA member companies spend hundreds of millions of dollars to research and develop crop production and protection innovations to find scientific solutions to age-old challenges. ACPA member companies research, test and develop biotechnology innovations, including plants used in the production and protection of food and fiber crops, as well as non-food goods, such as plastics and pharmaceuticals. Patent protection is essential to the continued viability and growth of biotechnology research and development.

AUTHORITY TO FILE

Both parties have given permission for the filing of this *amicus* brief. Copies of the permission letters are attached to the proof of service submitted to the Clerk.

SUMMARY OF ARGUMENT

The issues in this case are directed at the core of plant variety research. Annually, hundreds of millions of dollars

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[1] No counsel for a party authored this brief, in whole or in part, and no person or entity other than *amici curiae*, or their counsel, made a monetary contribution to the preparation or submission of this brief.

are invested in research and development of new plants and plant species. The research is complex and the development process is long and expensive. Success is limited. And, protection, in the form of patent protection, for the fruits of the investment of time and resources is critical to the continued development of new inventions in this growing science.

The Utility Patent Act, 35 U.S.C. § 101, *et seq.*, and the Plant Variety Protection Act, 7 U.S.C. § 2321, *et seq.*, together, provide the minimum necessary protections for this science. Together, the Utility Patent Act and the Plant Variety Protection Act present complimentary statutory schemes commensurate with the level of scientific inventiveness associated with a new product. The Utility Patent Act provides greater protection for the greater scientific achievement of developing not only a new product, but a new product that is not obvious. In contrast, a newly developed product that is deemed "obvious," is granted no protection under the Utility Patent Act, but may be eligible for the lesser protections of the Plant Variety Protection Act. This Act, however, contains several exemptions that permit competitors direct access to the new product for further research and development by the competitors for the benefit of the competitors. Thus, the two statutory schemes provide different protections for different products. The two statutes do not conflict, but compliment each other. Together, these two statutes have fostered significant growth and investment in the science of plant varieties.

Petitioners would deny all new plant variety inventions the protections of the Utility Patent Act, and limit all new inventions to the lesser protections of the Plant Variety Protection Act. Congress has issued no such mandate. Absent careful consideration of the consequences

of such a denial of the heightened protections for new plant variety research and a legislative enactment, the existing highly successful two-tiered protection for plant variety research and development should not be disregarded.

ARGUMENT

I. *Introduction*

The issue before this Court is one of fairness to the increasing number of inventors of nonobvious plant varieties. The Petitioners, in order to advance their own self-interest in reselling plant seed without the permission of the inventors, advocate that all inventors of nonobvious plant varieties should be stripped of the privileges and protections of the utility patent regime of 35 U.S.C. § 101 *et seq.* ("Section 101" and "Utility Patent Act"), and should be permitted only the lesser protections afforded by the Plant Variety Protection Act ("PVPA"), 7 U.S.C. § 2321, *et seq.* This Court previously has stated that Section 101 reflects Congress's understanding that patentable subject matter "includes[s] anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citation omitted). Inventions of nonobvious plant varieties are necessarily included in that, and should not be singled out from all other inventions under the sun for lesser protection based solely on an argument that Congress implicitly intended to do so. Rather, as with all nonobvious inventions, nonobvious plant varieties should remain eligible for the full protection afforded by Section 101.

Section 101 and the PVPA are two independent and complimentary statutory schemes that provide protection for two different levels of scientific achievement. While the protections afforded by the Section 101 and PVPA may

appear to overlap in some respects, there are substantial differences between the two statutory regimes in their scope of protection that correlate with the levels of the inventive acts that occur. Section 101, with its "patentability" standard, generally provides greater infringement protection for nonobvious inventions. 35 U.S.C. § 271. The PVPA, with its "certifiability" standard, generally provides lesser infringement protection for distinct sexually reproduced plants. 7 U.S.C. § 2402(a). The two statutes together ensure that the level of protection obtained for a particular plant variety is commensurate with the level of inventiveness achieved in creating the variety.

II. *PVPA Certificates vs. Utility Patents: Different Standards and Different Protections*

The principal practical distinction between the PVPA and Section 101 for plant variety scientists is the higher level of protection granted by Section 101 and the concomitant higher level of inventiveness mandated by Section 101. According to the Utility Patent Act, before an inventor may be entitled to utility patent protection, there must be proof that the invention is (1) new, (2) useful, and (3) nonobvious, 35 U.S.C. §§ 101-103, with nonobviousness the most difficult factor to establish. Thirty-five years ago, in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), this Court laid out the factual inquiries for determining whether an invention meets the high burden of nonobviousness, an inquiry still in use today. *See* Manual of Patent Examining Procedure (M.P.E.P.) § 2141 (7th ed. 2000). The traditional *Graham* factual inquiry for nonobviousness includes (1) determining the scope and content of the prior art, (2) determining the differences between the prior art and the claims at issue, and (3) determining the level of ordinary

skill in the art. 383 U.S. at 17. Only when this factual inquiry demonstrates that an inventive act has taken place is a product entitled to Section 101 patent protection.

The *Graham* factual inquiries, when applied to plant inventions, establish an equally high burden. *See Yoder Bros., Inc. v. California-Florida Plant Corp.*, 537 F.2d 1347 (5th Cir. 1976).[2] Tailoring the *Graham* factual inquiries for plant inventions, the Fifth Circuit inquired as to "(1) the characteristics of prior plants of the same general type, both patented and nonpatented, and (2) the differences between the prior plants and the claims at issue." 537 F.2d at 1379. The Fifth Circuit, noting that the best approach to the nonobviousness requirement for plant inventions is by reference to the underlying constitutional standard of "invention" which ensures that minor improvements will not be granted patent protection, proposed the following focus for determining whether a patent should be granted for a particular plant:

> If the plant is a source of food, the ultimate question might be its nutritive content or its prolificacy. A medicinal plant might be judged by its increased or changed therapeutic value. Similarly, an ornamental plant would be judged by its increased beauty and

[2] In *Yoder Bros.*, the 5th Circuit examined patentability under the Plant Patent Act, 35 U.S.C. §§ 161-164 (which covers asexually-reproducing plants), and not the Utility Patent Act, 35 U.S.C. § 101 *et seq.* However, the Plant Patent Act explicitly provides that the provisions of the Utility Patent Act apply to patents for plants. 35 U.S.C. § 161. Thus, a determination of patentability with regard to plants takes, as its starting point, the general requirements for patentability, and then applies them to plants. 537 F.2d at 1377; *see also Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1563-64 (Fed. Cir. 1995).

> desirability in relation to the other plants of its type, its usefulness in the industry, and how much of an improvement it represents over prior ornamental plants, taking all of its characteristics together.

Id.[3]

The requirement for nonobviousness establishes a "bright line" distinction between those lesser achievements in plant breeding which produce a merely *novel* variety, and those greater achievements in plant breeding which produce a *nonobvious* variety of plant. For the former, PVPA protection may be available, but no utility patent may issue. Under the PVPA, a plant variety scientist is entitled to protection for a plant variety if it is (1) new; (2) distinct from other varieties in existence; (3) uniform, such that variations are describable, predictable, and commercially acceptable; and (4) stable, so that the variety will remain unchanged by reproduction with regard to the essential and distinctive characteristics of the variety. 7 U.S.C. § 2402(a).

Reflecting different levels of scientific achievement, the PVPA and Section 101 provide markedly different levels of protection. Under the PVPA, Section 2541(a) enumerates the acts constituting infringement of a plant variety certificate as follows:

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[3] The United States Patent and Trademark Office similarly recognizes the applicability of utility patent law to plant inventions, instructing its examiners that applications for plant inventions examined under the Plant Patent Act "are subject to the same examination process as any other national application," and "[a]s such, the statutory provisions with regard to patentable subject matter, utility, novelty, obviousness, disclosure, and claim specificity requirements apply (35 U.S.C. 101, 102, 103 and 112)." M.P.E.P. § 1608.

> Except as otherwise provided in this subchapter, it shall be an infringement of the rights of the owner of a protected variety to perform without authority, any of the following acts ...:
>
> (1) sell or market the protected variety, or offer it or expose it for sale, deliver it, ship it, consign it, exchange it, or solicit an offer to buy it, or any other transfer of title or possession of it;
>
> (2) import the variety into, or export it from, the United States;
>
> (3) sexually multiply, or propagate by a tuber or a part of a tuber, the variety as a step in marketing (for growing purposes) the variety;
>
> (4) use the variety in producing (as distinguished from developing) a hybrid or different variety therefrom;
>
> (5) use seed which had been marked "Unauthorized Propagation Prohibited" or "Unauthorized Seed Multiplication Prohibited" or progeny thereof to propagate the variety;
>
> (6) dispense the variety to another, in a form which can be propagated, without notice as to being a protected variety under which it was received;
>
> (7) condition the variety for the purposes of propagation, except to the extent that the conditioning is related to the activities permitted under section 2543 of this title;

(8) stock the variety for any of the purposes referred to in paragraphs (1) through (7);

(9) perform any of the foregoing acts even in instances in which the variety is multiplied other than sexually, except in pursuance of a valid United States plant patent; or

(10) instigate or actively induce performance of any of the foregoing acts.

Id.

In the Utility Patent Act, 35 U.S.C. § 271(a) (1984 & Supp. 2000) succinctly describes the principal acts constituting infringement of a utility patent, as follows:

> Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefore, infringes the patent.

Id.

Thus, while both the PVPA and Utility Patent Act prohibit making, using, selling, offering for sale, or importing the protected property, the exceptions to the PVPA in practical effect dramatically reduce the protection of the PVPA.

Section 2542 of the PVPA provides a grandfather clause which permits persons to reproduce and sell a protected variety if they have developed that variety more than one year prior to the effective filing date of an adverse PVPA certificate application. Utility patent law has no

comparable provision, as under 35 U.S.C. § 102(b) the public use of an invention in the United States more than one year prior to the date of a United States application for utility patent is novelty-defeating prior art.

Section 2543 of the PVPA allows a farmer to save seed produced from a protected variety, for replanting on his own land, or for sale to another farmer should he change his plans for replanting. *See Asgrow Seed Co. v. Winterboer*, 513 U.S. 179 (1995). Utility patent law has no comparable exception, as under the utility patent law any resale violates the statutory protection.

Most significantly, Section 2544 of the PVPA provides that the use and reproduction of a protected variety for breeding or other bona fide research is not considered infringing. This commercial research exemption is the most contrary to utility patent law. The commercial research exemption exposes a PVPA certificate holder's "protected" invention to competitors. Specifically, the commercial research exemption allows for the use and reproduction of a protected variety by a competitor for the commercial purposes of "designing around" the variety. The resultant progeny may itself be subject to PVPA certification by the competitor.[4] The Utility Patent Act does not provide a broad

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[4] Congress sought to limit the potential for abuse associated with the commercial research exemption in 1994 amending the PVPA to provide that varieties "essentially derived" from protected varieties are infringing under the PVPA. An "essentially derived variety" is predominantly derived from another variety (the "initial variety") and retains the expression of the essential characteristics that result from the genotype of the initial variety. 7 U.S.C. § 2541(c)(1). However, the issue of how to distinguish an essentially derived (i.e., infringing) variety from a non-essentially derived (i.e., non-infringing) variety is not settled, and as such this amendment provides little added protection for plant variety scientists. Indeed, one commentator has noted that it is questionable

research exemption, permitting research only in certain narrow circumstances relating to submissions to the FDA. *See* 35 U.S.C. 271(e).

Thus, the PVPA strikes one balance between the property rights of breeders of a novel plant variety and the needs of society for accessibility to that variety. The PVPA imposes less stringent requirements for certifiability because of the absence of the nonobviousness requirement for patentability and in exchange provides the certificate holder with significantly less protection for the certified variety, as demonstrated by the PVPA's commercial research exemption.

The PVPA, however, is no substitute for utility patent protection available for nonobvious plant varieties. Where a greater inventive act has taken place and a *nonobvious* plant variety is invented, the PVPA, with its commercial research exemption permitting direct competitors unrestricted access, is grossly unfair. In no other industry is an invention which fully complies with the Utility Patent Act's heightened nonobviousness requirement and is fully disclosed by the Utility Patent Act's written description and enablement requirements subjected to such a commercial research exemption. Indeed, Congress has refused to carve out even a non-commercial, *university* research exemption to utility patent protection. *See Infigen, Inc. v. Advanced Cell Tech., Inc.*, 65 F. Supp. 2d 967, 981 (W.D. Wis. 1999).[5] Absent

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whether the 1994 amendment will actually deter abuse of the commercial research exemption. *See* Peter J. Goss, *Guiding the Hand That Feeds: Toward Socially Optimal Appropriability in Agricultural Biotechnology Innovation*, 84 Cal. L. Rev. 1395, 1410 (1996).

[5] "[I]t is up to Congress to decide whether there should be an infringement exemption for university-based research laboratories. So

clear Congressional action, inventors of nonobvious plant varieties should not be subject to the limited protection offered by the PVPA. Rather, as with all other inventions under the sun, inventions of plant varieties that achieve the high standard of nonobviousness should remain eligible for the broad based protection afforded by the utility patent statute.

III. *The Rights Afforded By PVPA Certificates and Utility Patents Are Independent and Complimentary*

The PVPA and Section 101, together, form a two-tiered protective scheme necessary for the emerging plant variety science. Together, the PVPA and Section 101 offer levels of protections commensurate with the achievement of the science and degree of inventiveness involved in the new plant variety.

For example, as discussed throughout this *amicus* brief, the level of inventiveness required by Section 101 and the PVPA are dramatically different. A discovery not deemed "nonobvious," and therefore not protectable under Section 101, still may be certified under the PVPA and made available to the scientific community for further enhancement under the PVPA's commercial research exception.

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far, Congress has not seen fit to grant one. *See, e.g.*, Patent Competitiveness and Technological Innovation Act of 1990, H.R. 5598, 2101st (sic) Cong. (1990), which was never passed but which, among other things, proposed exemptions from infringement liability for university research." *Id.*

When plant variety science discovers a new, useful and nonobvious variety, Section 101 protection is available. In exchange for the heightened protection, however, a fully enabling disclosure announcing to the world how to make the invention must be provided. *See* 35 U.S.C. § 112. As a result, upon expiration of the patent, the invention is in the public domain. The PVPA does not place the discovery in the public domain because there is no enablement requirement under the PVPA. *See* 7 U.S.C. § 2402(a).

Although more difficult to obtain, Section 101 protection for nonobvious inventions is broader in scope than the PVPA. For sexually reproduced plants, for example, the protection of Section 101 may extend to a class or species of plants. In contrast, the PVPA protection is limited to the particular variety described or deposited. *See* 7 U.S.C. § 2402(a). Thus, these different features of the PVPA and Section 101 create mutually compatible - - not contradictory - - levels of protections for different levels of scientific achievement.

The Petitioners cite two cases for the proposition that the PVPA and the utility patent statute conflict: *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976), and *TrafFix Devices, Inc. v. Marketing Displays, Inc.*, 121 S. Ct. 1255 (2001) (Pet. Br. 44-47). Unlike the statutes in the case at bar, each of Petitioners' cited cases involves statutory schemes that do not provide different levels of complimentary protection based on the degree of inventiveness achieved in creating the protectable subject matter. Rather, as in the *TrafFix* case, the pursuit of protection under one statutory scheme may factually bar protection under the other scheme. In the *TrafFix* case, this Court addressed whether a utility-patented mechanical device was also entitled to trade dress protection. 121 S. Ct.

at 1258. Citing the "well-established rule that trade dress protection may not be claimed for product features that are functional," this Court held that the device was not entitled to trade dress protection, due to the functional nature of the device as strongly evidenced by the utility patent. 121 S. Ct. at 1259-60. Thus, the pursuit of protection under the utility patent statute factually barred protection under trademark law, since the functional attributes that led to utility patent protection undercut the application for trademark protection for those same attributes.

In *Ropat,* the issue of a conflict between the utility patent and design patent statutory schemes was neither presented nor addressed. In fact, there can be no conflict between utility patent law and design patent law, because "[i]n a design patent application, the subject matter which is claimed is the design embodied in or applied to an article of manufacture (or portion thereof) and not the article itself." M.P.E.P. § 1502 (*citing Ex parte Cady*, 1916 C.D. 62, 232 O.G. 621 (Comm'r Pat. 1916) (emphasis in original). No design patent can be obtained if the claimed design is dictated solely by the utilitarian functionality of the article, because the design is not "ornamental," as required by 35 U.S.C. § 171. *See Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1566 (Fed. Cir. 1996). Thus, unlike the case at bar, the utility patent statute and the design patent statute do not provide different levels of protection based on the degree of inventiveness achieved in creating the protectable subject matter.

The PVPA and Section 101 provide two complimentary statutory schemes providing protection appropriate for the invention based in large part on the degree of inventiveness achieved in creating the protectable subject matter. There is no conflict between the PVPA and

Section 101 in the eyes of the plant variety scientists. Each statutory scheme has advantages. Each has disadvantages. Each has benchmarks that will or will not be achieved by the science.

CONCLUSION

The Petitioners advocate restricting the protections available to inventors of nonobvious plant varieties. Such inventors should not be singled out for lesser protection without specific authorization of Congress. Rather, as with all other inventions, nonobvious plant varieties should remain eligible for the utility patent protection.

Under the current system, the scope of protection available to inventors of plant varieties correlates with the level of inventive act that has taken place; the lesser standard of the PVPA provides generally lesser infringement protection, while the greater standard of the utility patent statute provides generally greater infringement protection. The two-tiered system ensures that the level of protection obtained for a particular plant variety is commensurate with the level of inventiveness achieved in creating the variety.

The two-tiered system of protections and exemptions has fostered extraordinary growth in plant variety science. Denial of the Utility Patent Act's heightened protections for the higher scientific achievement of nonobviousness would strike at the core of this industry's research and development community.

For all of the reasons discussed in this *amicus* brief, the Court should confirm that patents issued under 35 U.S.C. § 101 for plants and plant varieties, like all other inventions under the sun, are valid.

Respectfully submitted,

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In the Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (DOING BUSINESS AS FARM ADVANTAGE, INC.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (DOING BUSINESS AS SIOUXLAND SEEDS, INC.), KEVIN WOLFSWINKEL, TIM KAMSTRA, AND TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF *AMICUS CURIAE* OF MONSANTO COMPANY IN SUPPORT OF THE RESPONDENT

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INTEREST OF AMICUS CURIAE[1]

Amicus Curiae Monsanto Company ("Monsanto") is an agricultural solutions company based in St. Louis, Missouri. Monsanto supplies farmers worldwide with several herbicide products including Roundup®, the world's top-selling herbicide. Monsanto also supplies seeds for a wide range of crops. In some seed markets, Monsanto is a leading competitor of the respondent, Pioneer Hi-Bred International, Inc. ("Pioneer").

Monsanto is a world leader in developing genetically-engineered plants, and owns various U.S. utility patents covering synthetic or artificial genes that provide plants with resistance to such things as insect predators and herbicides. Monsanto also owns U.S. utility patents on sexually reproduced plants of the type at issue here; *i.e.*, those developed by man through plant breeding to yield new varieties not found in nature but which do not contain any synthetic, artificial or genetically-engineered components.

Monsanto is 85% owned by Pharmacia Corporation. While Monsanto has no financial interest in this case, Petitioners have noted that Monsanto is interested in, and may be affected by, the resolution of the legal issue before the Court. *See, e.g.*, Petition For Writ Of Certiorari, No. 99-1996, at 20 (filed June 12, 2000). Monsanto also has wholly-owned subsidiaries, including Asgrow Seed Company and DEKALB Genetics Corporation, with similar interests. Monsanto and such subsidiaries are also parties to pending patent litigation in which the legal question to be resolved in this case may become relevant.

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[1] Letters from all parties consenting to the filing of this brief have been filed with the Clerk. No counsel for a party authored this brief, in whole or in part, and no person or entity other than *Amicus Curiae*, or its counsel, made a monetary contribution to its preparation or submission.

SUMMARY OF ARGUMENT

Under the ordinary meaning of the statutory terms in 35 U.S.C. § 101 that have defined the scope of patentable subject matter since the nation's patent laws were first enacted over 200 years ago, a sexually reproduced plant is clearly a "composition of matter." Moreover, a sexually reproduced plant developed by a plant breeder that is not found in the wild is also a "manufacture" within the meaning of the statute. Thus, the unambiguous terms in Congress' statutory definition are properly interpreted to encompass new and useful varieties of sexually reproduced plants resulting from man's plant breeding techniques.

That legal conclusion follows directly from this Court's analysis of section 101 in *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), which held that a man-made micro-organism "constitutes a 'manufacture' or 'composition of matter' within the meaning of the statute." Notably, the asserted patents in this case do not involve any "transgenic" plants resulting from genetic engineering (*i.e.*, synthetically modifying a plant's DNA) or other means of molecular modification like the claimed micro-organism at issue in *Chakrabarty*. But even upon limiting the present controversy to its true scope, the plain meaning of that same statutory language leaves no doubt that "non-transgenic" sexually reproduced plants created by man's plant breeding efforts are patentable subject matter under the utility patent laws, which thus can be validly patented when the other statutory conditions for patentability are met.

Petitioners never try to explain why sexually reproduced plants created through plant breeding are not a "manufacture" or a "composition of matter" falling squarely within the express terms of section 101. Instead, Petitioners argue that Pioneer's asserted utility patents covering corn

seed products should be held invalid because Congress later intended to exclude or excise sexually reproduced plants from the scope of patentable subject matter under 35 U.S.C. § 101 when it enacted the Plant Patent Act ("PPA") in 1930 and the Plant Variety Protection Act ("PVPA") in 1970. However, not only is the contrary conclusion compelled by *Chakrabarty*, but it is confirmed by Congress' own analyses when it enacted the separate and distinct statutory protections under the PPA and the PVPA.

Seeking to encourage innovation and private investment in plant breeding, Congress enacted the PPA to negate any perceived "products of nature" exception to section 101 and to "relax" the written description requirements for asexually reproduced plants. That is all. Congress had no reason to analyze, address or amend section 101, and gave no indication of any intention of doing so. When Congress' statutory amendments under the PPA are examined in light of its purpose, its specific and limited statutory changes should not be construed today as evidencing a silent intent by Congress to change the meaning of the terms originally in section 101.

Finally, Congress' enactment of the PVPA in 1970 also cannot be construed as showing that Congress restricted the scope or the meaning of the patent laws. Just as the PPA only "relaxed" the description requirements for asexually reproduced plants, the PVPA granted lesser rights to inventors of sexually reproduced plants in exchange for a lower showing of novelty and a less rigorous disclosure. The admitted differences between the application requirements and the rights granted under the patent laws and under the PVPA demonstrate that those two bodies of law are easily reconciled short of finding any implied repeal by the PVPA of the distinct coverage under the patent laws.

ARGUMENT

I. THIS CASE RAISES WHETHER SEXUALLY REPRODUCED PLANTS RESULTING FROM PLANT BREEDING ARE WITHIN THE STATUTORY LANGUAGE OF SECTION 101

Because a plant breeder is an "inventor" and because sexually reproduced plants are patentable subject matter under the express terms of section 101, Petitioners' challenge to Pioneer's utility patents on various sexually reproduced corn plants and seeds should be rejected and the Federal Circuit's judgment should be affirmed. In addition to explaining why that result is compelled as a matter of law by the statute, Monsanto believes that it is important to add a further scientific perspective to the statutory interpretation issue before the Court.

For purposes of this brief, Monsanto uses the term "sexually reproduced plants" to refer only to non-wild, non-genetically engineered, sexually propagated plants that are obtained solely by plant breeding techniques, *i.e.*, horticultural methods that rely on the plant breeder's judgment, testing, selection, and other efforts to exploit the plants' natural sexual reproduction processes in producing new varieties. Monsanto respectfully submits that use of such terminology reflects the true scope of the important but narrow question presented by this case.

Unlike the "transgenic" plant and seed products invented and marketed by Monsanto, Pioneer's patents cover sexually reproduced corn plants and seeds that are "non-transgenic," *i.e.*, that have not been synthetically modified, as through genetic engineering. Instead, Pioneer's patented plants were developed using plant breeding techniques, such

as where a plant breeder selects two natural plants to cross and "grow[s] the parent plants in juxtaposition" to produce an offspring containing no genetically-engineered components but which would not have been produced by nature without man's involvement. *See* S. Rep. No. 315, 71st Cong., 2d Sess. 7 (1930) ("1930 Senate Report").

As this Court explained in *Chakrabarty*, "the relevant distinction [is] not between living and inanimate things, but between products of nature, whether living or not, and human made inventions." 447 U.S. at 313. As an example of the former, "a new plant found in the wild is not patentable subject matter." 447 U.S. at 309. However, a sexually reproduced plant that has been transgenically modified, such as by inserting synthetic genes or genes not naturally found in that plant species, is legally indistinguishable from the "human-made, genetically engineered bacterium" in *Chakrabarty*. *Id.* at 305. The latter was readily perceived by this Court as being a "manufacture" or "composition of matter" that represented the handiwork of man and thus was statutory subject matter under section 101 even though it was also a living thing. *Id.* at 309-10.

In *Chakrabarty*, this Court rejected the argument that Congress' enactments of the PPA and the PVPA (which specifically excluded "bacteria") evidenced Congress' understanding that the terms "manufacture" and "composition of matter" did not include living things. 447 U.S. at 311. However, because *In re Arzberger*, 112 F.2d 834 (C.C.P.A. 1940), had held that bacteria were not "plants" under the PPA, see 447 U.S. at 314, the petitioner in *Chakrabarty* argued that all living things were outside section 101, regardless of any man-made or synthetically engineered components. Just as the parties in *Chakrabarty* overstated that question presented as being whether Congress intended for all living things or for no livings things to be

patentable, see *In re Bergy*, 596 F.2d 952, 975-76 (C.C.P.A. 1979), it is overstatement to posture the question in this case as raising whether all sexually reproduced plants – transgenic and non-transgenic alike – are statutory subject matter or whether none are.

For example, it has been argued in this case that "[t]he broader coverage available through Section 101 is increasingly important in light of advances in genetic engineering, such as the use of recombinant DNA technology to develop utility-patented plants having improved insecticidal properties" and that "[t]he breadth of coverage afforded by utility patents may be essential in some circumstances to protect plant inventions produced by genetic engineering." Brief for the United States As *Amicus Curiae*, at 10 n.5 (filed Jan. 17, 2001). While patent coverage is indeed important to encourage the significant innovation and investment involved in creating "transgenic" inventions, this case simply does not involve the propriety of utility patent coverage for any aspect of genetic engineering with respect to any type of plant.

As explained in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1372 n.6 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999):

> The dispositive inquiry is whether the claim as a whole is directed to statutory subject matter. It is irrelevant that a claim may contain, as part of the whole, subject matter which would not be patentable by itself. "A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer." [*Diamond v. Diehr*, 450 U.S. 175, 187 (1981)].

The claimed invention in *State Street Bank* did not become nonstatutory merely because it involved a process or algorithm for manipulating numbers.[2] 149 F.3d at 1374-75. Similarly, a sexually reproduced plant that has been modified with a new and useful synthetic gene would not be rendered nonstatutory, even if the plant by itself were held not to be patentable subject matter under section 101.

For that reason, any arguments offered on either side of this case premised upon the existence or importance of the "transgenic" biotechnology industry that was sparked by *Chakrabarty* are irrelevant to the statutory construction issue before this Court. Whatever outcome may result in this Court, the still-developing technologies utilizing genetic engineering are not implicated here and thus should not be affected by a case that does not present any controversy over any such "transgenic" inventions. In any event, upon turning to the question that is truly at issue, Congress has confirmed that a plant breeder is an "inventor" under the Constitution and the patent laws, and that "non-transgenic" sexually reproduced plants can be patentable subject matter under the express terms of section 101.

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[2] *See, e.g., Parker v. Flook*, 437 U.S. 584, 590 (1978) ("[A] process is not unpatentable simply because it contains a law of nature or a mathematical algorithm."); *Mackay Radio & Telegraph Co. v. Radio Corp. of America*, 306 U.S. 86, 94 (1939) ("While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.").

II. PLANT BREEDERS ARE "INVENTORS" UNDER THE CONSTITUTION AND THE LANGUAGE OF SECTION 101

"Congress shall have the power . . . To promote the Progress of Science and useful Arts, by securing for limited times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST., Art. I, sec. 8, cl. 8. The constitutional reference to "invention" is also reflected in the statutory language:

> Whoever invents or discovers any new or useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. Until this case, however, no federal court had directly addressed whether sexually reproduced plants achieved by plant breeding are statutory subject matter.

The language now found in 35 U.S.C. § 101 defining patentable subject matter has been substantively unchanged since it was first enacted. As summarized in *Chakrabarty*:

> The Patent Act of 1793, authored by Thomas Jefferson, defined statutory subject matter as "any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement [thereof]." Act of Feb. 21, 1793, § 1, 1 Stat. 319. ... Subsequent patent statutes in 1836, 1870, and 1874 employed the same broad language. In 1952, when the patent laws were recodified, Congress replaced the word "art" with "process," but otherwise left Jefferson's language intact. The Committee Reports accompanying the 1952 Act inform us that Congress intended statutory subject matter to "include anything under the sun that is made by man."

447 U.S. at 308-09. Clearly, sexually reproduced plants can be found somewhere "under the sun." Hence, the question is whether new and useful varieties of sexually reproduced plants resulting from the evolving techniques of plant breeding are "made by man." That inquiry has been resolved in the affirmative by Congress' explicit recognition that a plant breeder is indeed an "inventor."

When Congress enacted the PPA, the legislative history included a detailed analysis why those amendments to the patent laws fell within Congress' legislative power under Article I. *See* 1930 Senate Report, at 6-9. As stated therein, "[t]here can be no doubt that the grant of plant patents constitutes a promotion of 'the progress of science and useful arts' within the meaning of the constitutional provision." *Id.* at 6. Moreover, that is true for all patents granted under Title 35, whether on sexually reproduced plants or other technology, because all patents have been required by Congress to be new, useful, and satisfy the other conditions of patentability.[3]

Congress realized in 1930 that the "only question" was "Is the new variety a discovery and is the originator or

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[3] No further Congressional inquiry into whether a specific type of invention promotes progress is required. Section 101 is to be given a "wide scope" because Congress cannot know what future technological advances will result in patentable invention. *See Chakrabarty*, 447 U.S. at 308; *Bergy*, 596 F.2d at 974 (noting that the Founding Fathers and past Congresses could not have foreseen the technologies that have allowed man to walk on the moon, cure diseases, and use pocket calculators).

discoverer an inventor?" 1930 Senate Report, at 6. Congress then explained at length why "there is no apparent difference ... between the part played by the plant originator in the development of new plants and the part played by the chemist in the development of new compositions of matter which are patentable under existing law." *Id.* at 7.

> Obviously, these new compositions of matter do not come into being solely by act of man. The chemist who invents the composition of matter must avail himself of the physical and chemical qualities inherent in the materials used and of the natural principles applicable to matter. Whether or not he is aware of these principles does not affect the question of patentability. . . .
>
> The same considerations are true of the plant breeder. He avails himself of the natural principles of genetics and of seed and bud variations. He cultivates the plants in his own laboratory under his own eye. He may test and experiment with them on a variety of proving grounds. He may promote natural cross-pollination by growing the parent plants in juxaposition. . . . Finally, the plant breeder must recognize the new and appreciate its possibilities either for public use or as a basis for further exercise of the art of selection.

1930 Senate Report, at 7. Notably, the above analysis as to why a plant breeder is an "inventor" does not distinguish between sexual or asexual reproduction, and thus applies equally to both situations.

Congress reasonably concluded that the development of a new plant by a plant breeder and the development of a

new composition of matter by a chemist are comparable acts of "invention" or "discovery" for purposes of the Constitution and the patent laws.

> But even were the plant developer's contributions in aid of nature less creative in character than those of the chemist in aiding nature to develop a composition of matter which has theretofore been non-existent (an assumption which the committee does not believe to have basis in fact and which is here made solely for purposes of argument), nevertheless, the protection by patents of those engaged in plant research and discovery would not be beyond the constitutional power of the Congress.

1930 Senate Report, at 7-8. Thus, unless Congress exceeded its constitutional authority when passing the PPA and the PVPA (which it did not), Congress necessarily had the legislative power to include some or all forms of plants as statutory subject matter under the patent laws -- which its original statutory language did.

III. UNDER THE PLAIN MEANING OF THE STATUTORY LANGUAGE IN SECTION 101, SEXUALLY REPRODUCED PLANTS PRODUCED BY PLANT BREEDING ARE A "MANUFACTURE" OR A "COMPOSITION OF MATTER"

Petitioners never deny that sexually reproduced plants are a "manufacture" or a "composition of matter" within the express terms of section 101. As discussed *infra*, Petitioners argue that Congress should be viewed as having intended to

exclude such plants from being statutory subject matter under the patent laws because it enacted the later, more "plant-specific" statutes. Indeed, that argument implicitly recognizes that plants bred by man otherwise fall within the broad scope of the terms recited in section 101.

In *Chakrabarty*, this Court decided the "narrow" issue of statutory construction that "respondent's micro-organism constituted a 'manufacture' or 'composition of matter' within the meaning of the statute." 447 U.S. at 307. Similarly, this case poses whether sexually reproduced plants created by plant breeding are a "manufacture" or "composition of matter" within the meaning of section 101. As shown below, the legal analysis in *Chakrabarty* leads to the same conclusion in this case as was reached in 1980.

The claimed invention in *Chakrabarty* was a "human-made, genetically engineered bacterium ... capable of breaking down multiple components of crude oil." 447 U.S. at 305. The Patent Office ("PTO") examiner rejected the claims because micro-organisms were "products of nature" and because "living" things were not patentable subject matter under section 101. 447 U.S. at 306. The Board affirmed on the latter ground, concluding that the legislative history of the PPA showed Congress did not intend section 101 to cover living things such as the laboratory-created micro-organisms at issue. *See* 447 U.S. at 306.

As with any issue of statutory construction, this Court's analysis in *Chakrabarty* began with the language of the statute. 447 U.S. at 308 (citation omitted).

> "[U]nless otherwise defined, words will be interpreted as taking their ordinary, contemporary meaning common meaning." *Perrin v. United States*, 444 U.S. 37, 42 (1979).

> We have also cautioned that courts "should not read into the patent laws limitations and conditions which the legislature has not expressed." *United States v. Dubilier Condensor Corp.*, 289 U.S. 178, 199 (1933).

447 U.S. at 308. The Court reiterated its adoption of common meanings for the terms "manufacture" and "composition of matter."[4] *Id.* The Court also stressed that "[i]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given a wide scope." *Id.*

Without deciding whether the claimed man-made micro-organism in *Chakrabarty* was better viewed as being a "manufacture" or a "composition of matter" for purposes of section 101, the Court held:

> [R]espondent's micro-organism plainly qualifies as patentable subject matter. His claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter -- a product of human ingenuity "having a distinctive name, character [and] use." ... [T]he patentee has produced a new bacterium with markedly different characteristics

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4 "Manufacture" is interpreted as being "the production of articles for use from raw or prepared materials by giving to these properties new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." 447 U.S. at 308 (citing *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1 (1931)). "Composition of matter" was given its ordinary meaning to include "all compositions of two or more substances and ... all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders, or solids." 447 U.S. at 308 (citations omitted).

> from any found in nature and one having the potential for significant utility. His discovery is not nature's handiwork, but his own; accordingly, it is patentable subject matter.

447 U.S. at 309-10. Because that micro-organism contained man-made plasmids produced by genetic engineering that were not naturally occurring, any need for further statutory construction was not necessary to the result in *Chakrabarty*.

IV. THE ARGUMENTS AGAINST PATENTABILITY REJECTED IN *CHAKRABARTY* ALSO DO NOT APPLY HERE

In enacting the PPA, Congress addressed two factors thought to remove plants from patent protection prior to 1930. 447 U.S. at 311. The first was that plants, even those artificially bred, were "products of nature" not subject to patent protection. *Id.* at 311-12 & n.8. The second was that plants were thought not amenable to the "written description" requirement of the patent law. 447 U.S. at 312 (citing 35 U.S.C. § 112). The reasoning of *Chakrabarty* shows that neither factor provides any basis for reversing the Federal Circuit's judgment in this case.

A. Any "Product Of Nature" Exception To Section 101 Is Limited To Matter Created By Nature And Found In The Wild

Congress explained at length why the work of the plant breeder "in aid of nature" was patentable invention. *See* 1930 Senate Report, 6-8. As shown *supra*, that analysis establishes the plant breeder as an "inventor" under the patent laws. More importantly, *Chakrabarty* limited any

"product of nature" exception to that which is truly found in or created by nature alone.

> This is not to suggest that § 101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena, and abstract ideas have been held not patentable. Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. . . . Such discoveries are "manifestations of . . . nature, free to all men and reserved exclusively to none."

447 U.S. at 309 (citations omitted); *see In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994) (*en banc*) (noting that the Supreme Court has not created any additional categories of subject matter excepted from section 101).

In the PPA, Congress did not protect "newly found" plant varieties because a person discovering such plant "has in no way engaged either in plant cultivation or care and who has in no other way facilitated nature in the creation of a new and desirable variety." 1930 Senate Report, at 7.

> There is a clear and logical distinction between the discovery of a new variety of plant and of certain inanimate things, such, for example, as a new and useful natural mineral. The mineral is created wholly by nature unassisted by man ... On the other hand, a plant discovery resulting from cultivation is unique, isolated, and is not repeated by nature, nor can it be reproduced by nature unaided by man . . . .

Id. at 5. Citing that history, this Court in *Chakrabarty* held that the relevant distinction for purposes of patentable subject

matter was "between products of nature, whether living or not, and human made inventions." 447 U.S. at 313.

As realized by Congress, a plant breeder may avail himself of the natural principles of genetics, but it is the breeder that selects which parent plants to cross in a manner and combination that nature would not be able to do on its own. *See* 1930 Senate Report, at 6-7. For example, a breeder might cross a plant from Maine with a plant with other desirable traits from Texas in hopes of creating a variety with new traits suitable for Oregon. Nature itself could not cross-pollinate such plants in juxtaposition. *Id.* Without man's judgment, selection, and testing, such new varieties would not be created. Thus, any "product of nature" exception to section 101 should not be extended to foreclose sexually reproduced plants created by man's plant breeding from being patentable subject matter.

B. Any Issue Whether The Claimed Plants Meet The Statutory Conditions For Patentability Does Not Implicate Whether Such Plants Are Patentable Subject Matter

In enacting the PPA, Congress also addressed the perception that plants could not be claimed in a manner that would satisfy 35 U.S.C. § 112 by relaxing the "written description" requirement for asexually reproduced plants to "a description ... as complete as is reasonably possible." 35 U.S.C. § 162. While the statutory conditions for patentability have not been "relaxed" for any other type of invention, any inability or difficulty for a particular invention, including sexually reproduced plants, to meet the statutory conditions has no bearing on whether the subject matter of such invention is within the statutory scope of section 101.

Other than "utility," the only relevant inquiry under section 101 is whether the claimed subject matter falls in at least one of the statutory categories. *See State Street Bank*, 149 F.3d at 1375 & n.9. Considerations of novelty, obviousness, or other statutory patentability conditions are irrelevant to determining whether the claim is directed to "statutory subject matter."[5] *See Parker*, 437 U.S. at 593 (explaining that inquiry into statutory subject matter under § 101 "must precede" any inquiries into whether conditions of patentability are met).

Since *Chakrabarty*, the PTO has issued regulations governing biotechnology invention disclosures. *See* 37 C.F.R. §§ 1.801-.824. Such regulations are not directed to plant patents under the PPA, but specifically pertain to depositing biological material for purposes of patents for inventions under 35 U.S.C. § 101. 37 C.F.R. at § 1.801 ("the term biological material shall include material that is capable of self-replication either directly or indirectly"). The regulations further state that "[b]iological material need not be deposited unless access to such material is necessary for the satisfaction of the statutory requirements for patentability under 35 U.S.C. § 112." 37 C.F.R. § 1.802(a).

While plant breeding was known to Congress in 1793, it is the scientific advances in new fields, such as genetic mapping and gene fingerprinting, that now allow

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[5] In *Chakrabarty*, no "conditions and requirements" of "patentability" such as novelty under 35 U.S.C. § 102 or nonobviousness under 35 U.S.C. § 103 were before this Court. 447 U.S. at 307 n.5. The Federal Circuit also did not address any statutory conditions of patentability in this case, and none was raised to this Court. Pet. App. 9; *see State Street Bank*, 149 F.3d at 1372 n.2 (noting that compliance with § 101 is but the first door that must be opened on the difficult path to patentability) (citing *Bergy*, 596 F.2d at 960)).

plant inventors to describe and distinguish new varieties in a manner to satisfy the statutory conditions for utility patents. It should not be surprising that there was a lack of patent applications on plants prior to such advances. As the Federal Circuit summarized, "the precision of description is no longer an insurmountable obstacle, due both to [the PTO deposit rules], and advances in botanical understanding and analysis." Pet. App. 5. Thus, what has changed since 1800 is the ability of plant breeders to satisfy the requirements of the nation's patent laws that have applied to inventors in every other field for the past 200 years.

If the plant breeding discoveries of Thomas Jefferson and Luther Burbank could not be described so as to satisfy the utility patent laws, that did not mean that their new plants were not inventions or that those plants would not have been patentable subject matter if the technology had existed by which to satisfy the separate statutory conditions for patentability. If that distinction became blurred into a general belief that plants could not be patented, it was the belief that was in error. No decision of this Court ever adopted that belief. The statutory terms defining patentable subject matter have not changed. Such an erroneous belief regarding the scope of the patent laws, no matter how widely-held or long-standing, cannot control the statutory interpretation issue that has now reached this Court.

The patent law allows utility patents on discoveries beyond the anticipation or comprehension of Congress when it enacted the law in the first place. *See supra* note 3. At least for sexually reproduced plants, it is the technology needed to obtain patent protection rather than the technology used for creating the invention that has only recently caught up with the law. But even if the necessary science still had not yet advanced to the point that would allow plants to meet the disclosure requirements or the other statutory conditions,

there is no justification for ignoring or distorting the plain meaning of section 101 to excise plants from the realm of potentially patentable subject matter.

V. THE PPA AND THE PVPA DO NOT EVIDENCE CONGRESS' INTENT TO REMOVE PLANTS FROM THE SCOPE OF SECTION 101

Petitioners offer two additional arguments as to how Congress eliminated any utility patent protection for sexually reproduced plants. First, Petitioners argue that the statutory language in section 101 was amended when the PPA was enacted in 1930 to include a specific reference to asexually reproduced plants, which shows that the existing language did not encompass plants. Pet. Br. 19. Second, Petitioners assert that Congress enacted the PVPA in 1970 as a later and more specific statute for the "federal protection" of sexually reproduced plants, which shows Congress intended to exclude such plants from being statutory subject matter under the patent laws. Pet. Br. 13-28, 37-43. However, neither theory can alter the plain meaning of section 101.

"[A]bsent some clear indication that Congress focused on the issues ... directly related to the one presently before the Court, there is no basis for reading into its actions an intent to modify the plain meaning of the words found in § 101." *Chakrabarty*, 447 U.S. at 314 (quotation omitted). In that case, this Court noted that Congress had not focused on whether all living things were excluded from the patent laws when enacting the PPA and PVPA. *Id.* at 312-14. In enacting those laws, however, Congress also did not focus on delineating the scope of the subject matter falling within the language of section 101.

A big difference exists between Petitioners' argument that Congress "never intended seeds and seed grown plants to be the subject of utility patent protection" (Pet. Br. 9) and Congress' understanding the scientific reality that patents could not be obtained on plants without relaxing the conditions for patentability for certain plants (as in the PPA) or providing "patent-like" protection for other plants based on a lesser showing but less exclusive rights than available under the utility patent laws (as in the PVPA). *See Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 181 (1995). As shown below, neither "plant-specific" act conflicts with or alters the conclusion that sexually reproduced plants can be patentable subject matter under section 101.

A. The Statutory Amendments Under The PPA Must Be Viewed In Light Of The Specific Problems Being Addressed By Congress

Among Congress' purposes for the PPA were "to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry" and to "stimulate plant development through private funds." 1930 Senate Report, at 1-2. Realizing that a new variety could be reproduced without restriction once it was released, Congress wanted to give private breeders an incentive to innovate, so that the public would benefit from new varieties and so private investment could reduce public funding for plant breeding. *Id.*

Amending, or even identifying, the true scope and meaning of section 101 was not part of Congress' undertaking. Rather, Congress' purpose was much narrower and was directed only to lowering the patentability hurdle for asexually reproduced plants, not on barring all other plants

from any potential patent protection. To be sure, Congress did add the language highlighted below to section 101:

> Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvements thereof, ***or who has invented or discovered and asexually reproduced any distinct and new variety of plant other than a tuber-propagated plant,*** ... may ... obtain a patent therefor.

Act of May 23, 1930, Pub. L. No. 71-245, ch. 312, sec. 1, 46 Stat. 376, 376. Petitioners isolate that single amendment and assert that it was intended to restrict the meaning of statutory language that had been unchanged for over 130 years. Surely Congress would not have amended the scope of patentable subject matter in utter silence.

According to Petitioners, "[i]f the patent laws before 1930 allowed patents on 'plants' then there would have been no reason for Congress to have passed the 1930 PPA." Pet. Br. 19. But as explained in *Chakrabarty*, the "reason" for passing the PPA was not to redefine patentable subject matter but was to "relax" the written description requirement so that asexually reproduced plants could satisfy the statutory conditions for patentability. 447 U.S. at 312. Contrary to Petitioners' view, it was the change to section 112 that was needed to enable patent protection to be obtained for plants even though plants already were patentable subject matter under section 101. That was the "reason" for the PPA, and its amendments cannot now be interpreted or given new meaning divorced from that purpose.

Moreover, the added phrase embodies Congress' lengthy analysis as to why plant breeders were "inventors"

for purposes of the Constitution and the patent laws. *See supra*. In light of the apparent view in 1930 that a "products of nature" exception applied to all plants (rather than just wild plants), Congress' decision to make explicit its confirmation that plants asexually reproduced by man were patentable subject matter under the terms of the statute should not be faulted in hindsight nor used now to reduce the original scope of the statute. Even now, section 161 provides that "[t]he provisions related to patents for inventions shall apply to patents for plants, except as otherwise provided," which confirms that "asexually reproduced plants" are within Title 35 and were simply a subset of the original statutory categories.

Petitioners still argue that "in passing the plant-specific PPA, [Congress] expressly stated its intent that the words 'art, machine, manufacture, or composition' … did not include 'plants.'" Pet. Br. 19. However, what Congress realized in 1930 was that patents were not being obtained on plants; all that Congress intended through the PPA was to alleviate that by confirming that plant breeders were inventors and by "relaxing" the description requirements for asexually reproduced plants. At no point in the PPA's legislative history is there any discussion that plants were not or should be removed from being potentially patentable subject matter under section 101.

Petitioners also suggest that a "new category" was added in 1930 because Congress intended that plants created by plant breeding did not fall into the four existing statutory categories. Pet. Br. 8. Not only did Congress also not state that view, but Petitioners assume that the statutory categories must be mutually exclusive. However, some inventions will be in multiple categories, such as being both a "machine" and a "manufacture." Indeed, this Court in *Chakrabarty* held that the claimed micro-organism was statutory without selecting

between "manufacture" or "composition of matter." 447 U.S. at 309. Because sexually reproduced plants can also be either one, the phrase concerning asexually reproduced plants added to the statutory language in 1930 does not support concluding that "sexually reproduced plants" could never be statutory subject matter.

Petitioners also argue that Congress' failure to extend the PPA to plants that propagated by seeds means that Congress (at least as of 1930) did not intend that such plants be statutory subject matter eligible for utility patent protection. Pet. Br. 32. However, the fact that Congress relaxed certain conditions for patentability for only asexually reproduced plants cannot be interpreted as having excluded sexually reproduced plants from the patent laws, but merely as having left the conditions of patentability for all other inventions, including sexually reproduced plants, unchanged. If inventors of sexually reproduced plants could not meet the "unrelaxed" conditions in 1930, it was not because Congress had eliminated any possibility that a utility patent could ever be granted on such plants once future plant breeders became able to satisfy those conditions.

Even so, Petitioners try to bolster their view of the significance of the PPA by noting that the 1952 Patent Act placed the definition of patentable subject matter in section 101 and moved the provisions unique to plants to 35 U.S.C. §§ 161-64. Pet. Br. 19-20. However, neither was a substantive change. *See* 35 U.S.C. § 101 (Revisor's note) ("Section 101 follows the wording of the existing statute as to the subject matter for patents, except that the reference to plant patents has been omitted for incorporation [in Chapter 15]."). Nevertheless, Petitioners argue that the absence of the word "plant" in section 101 and moving the prior reference to "asexually reproduced plants" shows that Congress intended

in 1952 to exclude sexually reproduced plants from being statutory subject matter. Pet. Br. 8, 20.

If any legal significance can be attributed to those 1952 amendments, it arises from section 101 being given the same substantive definition for patentable subject matter as the patent laws in 1793. That "return" to the original language indicates that neither the addition of the clause regarding "asexually reproduced plants" to the statutory definition of patentable subject matter in 1930 nor the removal of that clause in 1952 had any effect on the meaning and scope of the original statutory categories. Because the ordinary meanings of "manufacture" and "composition of matter" include sexually reproduced plants as potentially patentable subject matter, that meaning was not changed when Congress enacted the PPA in 1930.

B. The PVPA Provides No Basis For Restricting Or Repealing The Plain Scope Of Section 101

Petitioners argue that utility patents cannot cover sexually reproduced plants because Congress did not extend the patent laws to such plants when it passed the PVPA in 1970. Pet. Br. 11. However, the format of the PVPA, and its inclusion in Title 7, show only that Congress chose not to amend the patent laws as the means for affording a lesser bundle of rights to inventors of sexually reproduced plants that did not or could not meet the higher conditions for patentability under Title 35.

Petitioners agree that "[t]he utility patent standards are different than the PVPA standards." Pet. Br. 10. As the Federal Circuit explained, "the [PVPA] does not include the extensive examination system that is applied to applications for patents, contains several provisions specific to

agricultural crops, and is administered by the Department of Agriculture." Pet. App. 7. Petitioners point out that a plant variety can be protected under the PVPA provided it is new, distinct, uniform, and stable (7 U.S.C. § 2402) while stressing that utility patents on sexually reproduced plants are not issued under those four standards, but must meet the more stringent conditions for patentability in 35 U.S.C. §§ 102-103, 112. Pet. Br. 12. Thus, it is not disputed that Congress imposed distinct -- and clearly lower -- disclosure and novelty obligations for new varieties of sexually reproduced plants under the PVPA than are required under the patent laws.

Petitioners argue that owners of patented plants will have a statutory right to exclude others from doing acts that would be permitted if such varieties were protected only under the PVPA. Pet. Br. 11-12. Their two main examples are that (1) a farmer cannot save patented seed to replant on his own farm as permitted for seed protected only under the PVPA, 7 U.S.C. § 2543, and (2) the seed of a patented variety cannot be used in "bona fide research" as is permitted with seed protected only under the PVPA, 7 U.S.C. § 2544.[6] Pet. Br. 43-49. However, such differences merely show that Congress decided that more limited rights of exclusion were appropriate under the PVPA in light of the lower disclosure threshold for obtaining a PVPA certificate compared to what is required to obtain a utility patent.

The Federal Circuit agreed with the District Court that there was "no impediment to reading all the statutes

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6 As with any patented invention, farmers could be sued for patent infringement if they save and replant patented seed (in the absence of a license). The statutory right to exclude is the linchpin of the patent system, which means that a farmer's "right" to save seed must yield to the fundamental policies underlying the patent laws.

concerning plant protection in harmony" and that "the asserted conflict is simply the differences in the rights and obligations imposed by the two statutes." Pet. App. 6, 9. While Petitioners cite such differences to suggest that the PVPA and the patent laws are irreconcilable when applied to sexually reproduced plants, the fact that the PVPA contains some exceptions to its exclusive rights as a condition for its less rigorous showing to get a PVPA certificate disproves rather than proves any such conflict.[7] As the Federal Circuit recognized, "when two statutes are capable of co-existence, it is the duty of the courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective." Pet. App. 6 (quoting *Radzanower v. Touche Ross & Co.*, 426 U.S. 148, 155 (1976)).

In effect, the PVPA created an interim level of protection for sexually reproduced plants that could not yet satisfy the utility patent laws. As of 1970, the PVPA was the only practically attainable protection for such plant inventions. Now, given the recent advances in science, a plant inventor may choose between the more rigorous and expensive pursuit of a utility patent, or obtaining a PVPA certificate with its easier showing, lower costs, but less statutory protection. Pet. App. 6. However, the current possibility of alternative modes of statutory protection cannot retroactively give rise to an implied repeal of the patent laws with respect to sexually reproduced plants. Because the two statutes grant different rights for different showings as to any

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[7] *In re Hibberd*, 227 U.S.P.Q. 443 (PTO Bd. App. & Interf.), does not relate directly to whether the sexually reproduced plants at issue here are statutory subject matter because the corn products in *Hibberd* had been altered to produce high levels of tryptophan and hence were "transgenic" and within section 101 under *Chakrabarty*. Even so, *Hibberd*'s analysis (*id.* at 446-47) as to how the patent laws and the PVPA provide different levels of protection for sexually reproduced plants is relevant.

new variety, Petitioners' claim that same attribute cannot be protected by two statutes is inapplicable.[8]

Petitioners also claim that the PVPA's legislative history shows that Congress "intended" in 1970 that sexually reproducing plants not be patented. In *Alexander v. Sandoval*, ___ U.S. ___, 121 S. Ct. 1511, 1520 (2001), this Court explained that "legal context matters only to the extent that it clarifies text." Yet Petitioners want the "contemporary legal context" for the PVPA to alter the meaning of the preexisting text of section 101 in the patent laws. As stated in *Sandoval*, this Court has "never accorded dispositive weight to context shorn of text." *Id.* Because the PVPA never even addresses the text of the patent laws, the alleged context of the PVPA cannot be used to narrow the scope of section 101.

The District Court cited two allegedly conflicting statements in the PVPA's legislative history. First, it noted a Senate report stating that "[n]o protection is available to those varieties of plants which reproduce sexually, that is, generally, by seeds."[9] Pet. App. 26. However, as explained, there is a key distinction between no protection being available because the statutory conditions for patentability in § 112 could not be satisfied for such plants (as of 1970) and no protection being legally possible because such plants are

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[8] Neither *Traffix Devices, Inc. v. Marketing Displays, Inc.*, ___ U.S. ___, 121 S. Ct. 1255 (2001), nor *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976), supports Petitioners' broad proposition because each rejected an attempt to use a second federal statute to extend the term of a patent, which is not implicated here.

[9] *Cf. Vermont Agency of Natural Resources v. United States*, 529 U.S. 765, 783 n.12 (2000) (giving no interpretative significance to a sentence in a Senate report setting forth an erroneous understanding of the meaning of a statutory term enacted 123 years earlier).

outside the scope of section 101. As Congress' motivation for enacting the PVPA would be the same under either view, the mere enactment of the PVPA cannot provide any basis for interpreting the expansive scope of the patent laws as having been restricted by that enactment.

The second statement was that "[t]he committee ... finds that [the PVPA] does not alter the protection currently available within the patent system." Pet. App. 26. However, that statement is true whether patent protection for sexually reproduced plants was possible or not. If no patent protection was authorized under the terms of section 101, enacting the PVPA did not change that. However, if patent protection was possible, the PVPA would not undo that possibility because the two statutory schemes are clearly complementary, not mutually exclusive or conflicting. Moreover, the latter statement explicitly states that Congress did not intend to change any aspect of the utility patent laws, which confirms that the PVPA did not implicitly repeal any coverage for plants under section 101 encompassed by its preexisting terms.[10]

Finally, the plain meaning of the terms of section 101 shows why Petitioners' extensive reliance on *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132-33 (2000), is misplaced. In that case, this Court interpreted the statute at issue (the FDCA) as itself foreclosing the jurisdiction over tobacco products that the FDA had invoked. As this Court stated, "[t]he inescapable conclusion is that there is no room

[10] Petitioners' *amici* recognize that Congress "saw no need to amend Title 35 to prevent plant breeders from overriding the exemptions from liability in the PVPA by also obtaining utility patents." Brief for Amici Malla Pollack, at 11 (filed May 2, 2001). If Congress did not override the clearly different protections afforded by the patent laws when enacting the PVPA, Petitioners cannot be allowed to achieve that result here.

for tobacco products within the FDCA's regulatory scheme." *Id.* at 143. If tobacco products were encompassed by the term "devices" under the FDCA, then the FDA would have been required to remove them from the market. *Id.* at 135. Hence, the subsequent, tobacco-specific legislation cited was consistent with the FDCA, and merely confirmed this Court's interpretation of its terms.

Here, the opposite is true. If the PPA and the PVPA had not been enacted, there would be no question that the terms of section 101 encompass sexually reproduced plants and that patents on such plants could be granted if the other statutory conditions for patentability were met. Unlike the post-FDCA tobacco legislation in *Brown & Williamson*, the PPA and PVPA were not intended to substitute for or alter the existing patent laws but were to establish standards and rights distinct from the patent laws to allow some federal protection for plants that could not yet be attained through the utility patent laws. Thus, *Brown & Williamson* does not support Petitioners' assertion that sexually reproduced plants ceased being statutory subject matter under section 101 upon the enactment of the PVPA.

Finally, this Court in *Chakrabarty* soundly rejected the assertion that "micro-organisms cannot qualify as patentable subject matter until Congress expressly authorizes such protection." 447 U.S. at 314.

> Congress, not the courts, must define the limits of patentability; but it is equally true that once Congress has spoken it is "the province and duty of the judicial department to say what the law is." *Marbury v. Madison*, 1 Cranch 137, 177, 2 L. Ed. 60 (1803). Congress has performed its constitutional role in defining patentable subject

> matter in § 101; we perform ours in construing the language Congress has employed.

447 U.S. at 315. Here, Petitioners also suggest that Congress would have to add an explicit reference to "sexually reproduced plants" in section 101 before potential utility patent coverage would be available. However, the necessary words to authorize that conclusion have been in the statute since 1793. Upon construing "the language of § 101 as it is," 447 U.S. at 318, it should be clear to this Court that sexually reproduced plants produced through man's plant breeding are statutory subject matter.

CONCLUSION

For the reasons stated herein, the judgment of the United States Court of Appeals for the Federal Circuit should be affirmed.

Respectfully submitted.

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Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT, (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,
Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals For the Federal Circuit

BRIEF FOR WASHINGTON LEGAL FOUNDATION AND ALLIED EDUCATIONAL FOUNDATION AS *AMICI CURIAE* IN SUPPORT OF RESPONDENT

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QUESTION PRESENTED

Whether sexually reproduced seeds are patentable subject matter under 35 U. S. C. §101.

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INTEREST OF AMICI CURIAE

The Washington Legal Foundation (WLF) is a nonprofit public interest law and policy center based in Washington, D.C., with supporters across the Nation. WLF regularly appears in legal proceedings before federal and State courts to defend the principles of free enterprise and limited government. WLF has appeared as *amicus curiae* before this and other federal courts in cases involving property rights. *See, e.g.*, *City of Monterey* v. *Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687 (1999); *Dolan* v. *City of Tigard*, 512 U.S. 374 (1994); *Lucas* v. *South Carolina Coastal Council*, 505 U.S. 1003 (1992). It has also published numerous articles on intellectual property. *See, e.g.*, Michael Bettinger & Peter Berger, *Can Intellectual Property Be Protected On the Internet?*, WLF Legal Backgrounder (Apr. 14, 2000); Reid G. Adler & Kate H. Murashige, *Biomedical Product Patent Protection Essential to High-Tech Economy*, WLF Legal Backgrounder (Feb. 2, 1996).

The Allied Educational Foundation (AEF) is a nonprofit charitable and educational foundation based in Englewood, New Jersey. Founded in 1964, AEF is dedicated to promoting education in diverse areas of study, such as law and public policy, and has appeared as *amicus curiae* in this Court on several occasions.

WLF submits this brief in support of Respondent and with the consent of all parties. Letters of consent have been filed with the Clerk of the Court.[1]

STATEMENT

In the interest of judicial economy, WLF incorporates by reference the factual statement as it appears in the opinions of the U.S. District Court and the U.S. Court

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[1] No counsel for a party authored this brief in whole or in part, and no person or entity, other than the Washington Legal Foundation, its supporters, and its counsel made a monetary contribution to the preparation and submission of this brief.

of Appeals for the Federal Circuit in their decisions below. In addition, we wish to emphasize certain aspects of the record.

1. The question presented implicates three federal statutes: 35 U. S. C. §101; the Plant Patent Act of 1930 (PPA), Ch. 312, 46 Stat. 376, 35 U. S. C. §§161–64; and the Plant Variety Protection Act of 1970 (PVPA), 84 Stat. 1547, 7 U. S. C. §2321, *et seq.*

Section 101 of Title 35 provides:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent thereof, subject to the conditions and requirements of this title.

35 U. S. C. §101. The Board of Appeals and Interferences of the Patent and Trademark Office (PTO) has interpreted §101 to mean that sexually reproduced plants—these are produced by seeds rather than by a single parent, using a method such as grafting—are patentable subject matter. *Ex parte Hibberd*, 227 U.S.P.Q. (BNA) 443, 443–47 (Bd. Pat. App. & Interf. 1985). Since handing down *Hibberd* the PTO has issued hundreds of "utility patents" for sexually reproduced plants.

The PPA grants the PTO authority to issue patents covering new and distinct varieties of asexually reproduced plants. The relevant section of the PPA provides:

> Whoever invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an unculti-

> vated state, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U. S. C. §161. The same section further provides that, except as otherwise noted, "[t]he provisions of [Title 35] relating to patents for inventions shall apply to patents for plants." *Id.* The PTO has granted more than 10,000 patents covering asexually reproduced plants under §161.

The last of the three statutes at issue here, the PVPA, specifically establishes intellectual property protection for novel varieties of sexually reproduced plants that meet statutory criteria of distinctness, uniformity, and stability. *See* 7 U. S. C. §2402(a). With the enactment of the PVPA Congress established a statutory regime, apart from the patent regime found in Title 35, under which the Department of Agriculture may issue plant variety certificates to applicants who breed novel varieties of sexually reproduced plants. *See id.* at §2483.

2. Respondent Pioneer Hi-Bred International, Inc. (Pioneer) is "the world's largest seed corn producer." Pet. App. 14. Petitioner J.E.M. AG Supply, doing business as Farm Advantage, Inc., is "a family-owned full service agricultural supply business." *Id.* Other petitioners act as distributors for Farm Advantage. *Id.*

This case arose when Pioneer brought suit against Petitioners (collectively referred to hereafter as Farm Advantage) for allegedly infringing 17 patents held by Pioneer for "sexually reproducing corn plants." *Id.* Farm Advantage moved for summary judgment, asserting in defense that sexually reproducing plants like the varieties of genetically engineered corn covered by the patents at issue are not patentable subject matter under 35 U. S. C. §101. *Id.* at 16.

The U.S. District Court for the Northern District of Iowa denied Farm Advantage's motion for summary judgment and held that sexually reproduced plants are patentable subject matter under §101. *Id.* at 39. After analyzing the text of §101, the court determined that both well-established interpretive practice and congressional intent supported a broad reading of the provision. The court found that "the words of §101 have been liberally construed to include the most diverse range of imaginable and unforeseen developments in technology." *Id.* at 21. In addition, the court found that §101's broad language reflected the constitutional and statutory aims underlying the patent system. "The subject matter provisions [of Title 35] have been cast in broad terms to fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts' with all the means for the social and economic benefits envisioned by the Framers." *Id.* at 22 (quoting U.S. Const. art. I, §8, cl. 8). Relying also on *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980), the court concluded that "the scope of §101 includes man-made life forms, including plant life." *Id.* at 22.

The district court rejected Farm Advantage's argument that Congress had intended to exclude sexually reproduced seeds from the scope of 35 U. S. C. §101 by enacting the PPA and PVPA. A careful reading of the three statutory provisions led the court to conclude that "neither the PPA or the PVPA expressly includes any plant subject matter from protection under 35 U. S. C. §101 of the General Patent law." *Id.* at 24.

Legislative history proved to be no more availing to Farm Advantage. The court did find certain passages in the legislative history of the PVPA that could be understood to mean that "the drafters believed that there was no protection for plants which reproduce sexually,

that is, by seeds." *Id.* at 28. But the court explained that this belief was reasonable at the time and that it had no bearing on the scope of §101. When Congress enacted the PVPA plants were regarded as unsuitable for patenting because they were "products of nature." *Id.* at 29. It was also thought at the time that "plants were not amenable to the 'written description' requirement of the patent law." *Id.* *Chakrabarty* removed the first limit by holding that living organisms are patentable subject matter under §101. *See* 447 U.S. at 305, 309–10. Congress eliminated the other perceived restriction by relaxing the written description requirement.[2] Thus, the court determined that the enactment of PPA and PVPA did not remove sexually reproduced plants fall from the scope of §101. Instead these statutes were passed to address limitations in the patent system that subsequent legal developments have eliminated.

The district court further rejected Farm Advantage's argument that the enactment of the PVPA implicitly narrowed the scope of §101, allegedly because of "an irreconcilable conflict," *id.* at 30, between them. Citing the "cardinal principle of construction that repeals by implication are not favored," *id.* at 31 (quoting *United States* v. *Borden Co.*, 308 U.S. 189, 198–99 (1939)), the court found that the conflicts asserted by Farm Advantage "fall far short of what could be required to find an irreconcilable conflict or positive repugnancy that would mandate a partial repeal of § 101 by implication." *Id.* at 31.

The court found two reasons especially persuasive. Because "the scope of §101 is much broader than the

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[2] "Today, the requirements of [35 U. S. C.] §112 can be met through a written description combined with a deposit of the invention as required for some microorganisms." Pet. App. 29 (citing Manual of Patent Examining Procedure § 2403.02 (6th ed. 1997)).

scope of protection under the PVPA . . . [T]here are good reasons . . . why any applicant may choose §101 over the PVPA." *Id.* at 32. In addition, the court pointed to "the important differences between the legal standards that must be satisfied to receive a utility patent and the standard that must be satisfied to obtain a certificate under the PVPA." *Id.* The court then inferred that the differences between §101 and the PVPA reflected the greater degree of legal protection, and with it the correspondingly higher eligibility requirements, of §101. *Id.* at 32–33. Absent a genuine conflict, the court concluded that Congress had not intended with the enactment of the PVPA to implicitly exclude sexually reproduced plants from coverage under §101. *Id.* at 38–39.

The U.S. Court of Appeals for the Federal Circuit unanimously affirmed. *Id.* at 9. In a comparatively short opinion that closely followed the district court's reasoning, the Court of Appeals agreed with Pioneer that "the asserted conflict [between 35 U. S. C. §101 and the PPA and PVPA] is simply the difference in the rights and obligations imposed by the two statutes." *Id.* The court also rejected Farm Advantage's argument that this Court's decision in *Chakrabarty* "does not apply to plants because plants were intended to be excluded from the patent system, as evidenced by the enactment of other statutes to provide protection to plants." *Id.* at 4. Accordingly, the Federal Circuit held that sexually reproduced seeds are patentable subject matter under 35 U. S. C. §101. *Id.* Farm Advantage then petitioned for certiorari, which was granted. 121 S. Ct. 1077.

SUMMARY OF ARGUMENT

Farm Advantage's *amici* attempt to undermine the plain language of §101. They argue that the Intellectual Property Clause, U.S. Const. art. I, §8, cl. 8, authorizes

Congress to issue patents only when it serves the purpose of "promot[ing] the Progress of Science and the useful Arts . . . ." *Id.* The *amici* infer that "[u]ntil Congress makes this determination, utility patents on sexually reproduced plants are unconstitutional." Brief for Malla Pollack and Other Law Professors as *Amici Curiae* 3. They further argue that the Court should construe §101 narrowly, awaiting Congress's express determination that a novel or disputed subject matter is patentable.

With these arguments the *amici* "strain at a gnat, and swallow a camel." *Matthew* 23:24 (King James). They urge the Court to read §101 so parsimoniously that any dispute concerning the status of a novel subject matter would have to await resolution by Congress. At the same time, they saddle Congress with the task of explicitly determining the patentability of "anything under the sun that is made by man," *Diamond* v. *Chakrabarty*, 447 U.S. 303, 309 n.6 (1980). And they would void every existing patent, apparently regardless of the financial consequences, unless issued on the strength of such a determination. These results would be so disruptive that they instantly call into doubt the legal reasoning on which they rely. But even more fatal errors lie in the constitutional interpretation on which the arguments depend.

The text and original understanding of the Intellectual Property Clause teach that the Clause contains no mandatory purpose that limits the power of Congress to issue patents. Even if the Constitution contained such a limitation, §101 is not the proper statutory mechanism for ensuring a reasonable fit between the limits on congressional power and the issuance of patents. And the suggestion that §101 does not cover a novel or disputed subject matter until expressly authorized by

Congress is foreclosed by this Court's decision in *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980).

In addition to these constitutional and statutory arguments, Farm Advantage's *amici* raise various policy arguments aimed at denying patent protection to sexually reproduced seeds. These arguments entail concerns about the patent system, anticompetitive conduct, the plight of farmers, and genetic diversity. None is persuasive because each is irrelevant.

ARGUMENT

The question presented requires the Court to construe 35 U. S. C. § 101, which provides:

> Whoever invents or discovers *any* new and useful process, machine, manufacture, or composition of matter, or *any* new and useful improvement thereof, may obtain a patent thereof, subject to the conditions and requirements of this title.

35 U. S. C. §101 (emphasis added). This Court has recognized that "[i]n choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated the patent laws would be given wide scope." *Diamond* v. *Chakrabarty*, 447 U.S. 303, 308 (1980). Indeed, the Court has emphasized that "in dealing with the patent laws, we have more than once cautioned that 'courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"" *Diamond* v. *Diehr*, 450 U.S. 175, 182 (1981) (quoting *Chakrabarty*, 447 U.S. at 308) (quoting *United States* v. *Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). For these reasons, a straightforward reading of §101 ought to resolve this case against Farm Advantage.

However, Farm Advantage attempts to undermine the evident breadth of §101, arguing that Congress impliedly eliminated sexually reproduced plants as patentable subject matter by enacting the PVPA, a statute specifically targeted at protecting the intellectual property of plant developers.[3] *See* Br. Pet. 25–26, 37, 49. Farm Advantage's *amici* also strive to blunt the force of §101. Unable to deny the plain meaning of §101, they insist that this case is "not simply one of statutory construction." Brief for Malla Pollack and Other Law Professors as *Amici Curiae* 9. Instead, they argue that "utility patents on sexually reproduced plants are unconstitutional." *Id.* at 3.

The *amici* defend this remarkable contention based on three claims. First, they assert that "promoting progress is the required goal of the rights Congress has power to issue under the Intellectual Property Clause."

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[3] This argument fails for reasons explained by the Federal Circuit and the district court. *See* Pet. App. 8–9. 30–33. Passage of the PVPA operated as an implied repeal of §101 as to sexually reproduced plants only if there is a "'positive repugnancy,'" *United States* v. *Borden Co.*, 308 U.S. 189, 199 (1939) (quoting *Wood* v. *United States*, 41 U.S. (16 Pet.) 342, 363 (1842)), between the statutory provisions. But no conflict exists. Given the lower threshold of eligibility required under the PVPA, *compare* 35 U. S. C. §112 *with* 7 U. S. C. §2422, it is entirely reasonable for a plant breeder to seek protection under the PVPA without also seeking a utility patent. Conversely, possessing a utility patent does not automatically qualify one for protection under the PVPA. *See* 7 U. S. C. §2402(a)(3)–(4). The Federal Circuit was right to say that any disparities merely reflect "the difference in the rights and obligations imposed by the two statutes." Pet. App. 9. Absent a conflict between §101 and the PVPA, the chief prop of Farm Advantage's case collapses. For §101 on its face contains no language excluding sexually reproduced plants from patent protection. And as for the argument that the presence of overlapping protection somehow violates the law, the Court has already resolved that point. "Certainly the patent policy of encouraging invention is not disturbed by the existence of another form of incentive to invention." *Oil Co.* v. *Bicron Corp.*, 416 U.S. 470, 484 (1974).

Id. at 6. Second, they say that "[t]he purpose limitation in the Clause would be unnecessary if all conceivable 'exclusive rights' granted for 'limited times' to 'inventors' in their 'discoveries' would necessarily 'promote the progress of . . . the useful arts.'" *Id.* at 7. Third, they maintain that these constitutional limitations obligate Congress to "consider whether that specific scheme is likely to promote progress." *Id.* at 9.

I. THE INTELLECTUAL PROPERTY CLAUSE CONTAINS NO MANDATORY PURPOSE THAT LIMITS THE POWER OF CONGRESS TO ISSUE PATENTS.

Whether the Intellectual Property Clause contains a particular limit on congressional power "must necessarily depend on the words of the constitution [and] the meaning and intention of the convention which framed and proposed it for adoption and ratification to the conventions . . . in the several states." *Rhode Island* v. *Massachusetts*, 37 U.S. (12 Pet.) 657, 721 (1838). These textual and historical inquiries are independent. We begin by considering the constitutional text and then turn our attention to "evidence of the original understanding of the Constitution." *Alden* v. *Maine*, 527 U.S. 706, 741 (1999).

The Intellectual Property Clause delegates to Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, §8, cl. 8. These words should be neither stretched nor contracted, contrary to their natural meaning. "[T]he enlightened patriots who framed our constitution, and the people who adopted it, must be understood to have employed words in their natural sense, and to have intended what they have said." *Gibbons* v. *Ogden*, 22 U.S. (9 Wheat.) 1, 188 (1824).

From a purely textual perspective this Clause stands apart. Other clauses of article I, §8 delegate a certain power to Congress, such as the power "[t]o borrow Money on the credit of the United States," *id.* at art. I, §8, cl. 2, or "[t]o establish Post Offices and post Roads." *Id.* at art. I, §8, cl. 7. But they are silent on the question of what means Congress employs to exercise that power. Indeed, the Necessary and Proper Clause authorizes Congress "[t]o make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers . . . ." *Id.* at art. I, §8, cl. 18. The Intellectual Property Clause departs from this pattern. "It is unique in being the only instance wherein the delegates [at the Philadelphia Convention] prescribed a specific mode of accomplishing the particular authority granted." Edward C. Walterscheid, *To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution*, 2 J. Intell. Prop. L. 1, 33 (1994).

The words of the Intellectual Property Clause thus belie the claim that a substantive limitation on congressional power lies with the grant of power "[t]o promote the Progress of Science and the useful Arts," U.S. Const. art. I, §8, cl. 8. This interpretation, in effect, rewrites the clause, giving Congress the power "to secure for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries, for the purpose of promoting the progress of science and the useful arts." But reversing the syntax changes the meaning and confuses a constitutionally defined means of carrying out a delegated power with a constitutionally prescribed purpose. Read as it appears, the chief limitation on congressional power under the Intellectual

Property Clause lies with the unique specification of the exclusive constitutional means of exercising the power "[t]o promote the Progress of Science and the useful Arts." *Id.* Congress may use this power *only* "by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." *Id.*

Available "evidence of the original understanding of the Constitution" *Alden* v. *Maine*, 527 U.S. 706, 741 (1999)," lends this textual analysis further support. The Intellectual Property Clause entered the list of enumerated powers late in the proceedings of the Philadelphia Convention. On August 18, 1787, James Madison recommended several additions to the list of congressional powers, for referral to the Committee of Detail. Among such powers was the power "'[t]o secure to literary authors their copyrights for a limited time.'" 2 The Records of the Federal Convention of 1787, at 325 (Max Farrand ed., 1966). Immediately afterward Charles Pinckney moved for the inclusion of similar congressional powers: "'To grant patents for useful inventions'" and "'To secure to Authors exclusive rights for a certain time.'" *Id.* Less than three weeks later, on September 5, 1787, the Convention voted without objection to grant Congress the power "'[t]o promote the progress of Science and useful arts by securing for limited times to authors & inventors, the exclusive right to their respective writings and discoveries.'" *Id.* at 509. In the report by the Committee of Style the language was lightly edited to read, "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." *Id.* at 595. Apart from the distinctive eighteenth century habit of capitalizing nouns, this language survived intact in the version found today at Article I, §8.

During the ratification period, the Intellectual Property Clause attracted little attention and no controversy at all. Indeed, our research has revealed not a single Antifederalist statement opposing the delegation of this power to the national government. The case in favor of granting Congress the power to protect authors and inventors is found in a well-known passage of *The Federalist*:

> The utility of this power will scarcely be questioned. The copy right of authors has been solemnly adjudged in Great Britain to be a right at common law. The right to useful inventions, seems with equal reason to belong to the inventors. The public good coincides in both cases, with the claims of individuals. The States cannot separately make effectual provision for either of the cases,[4] and most of them have anticipated the decision of this point, by laws passed at the instance of Congress.

The Federalist No. 43, at 288 (Jacob E. Cooke ed., 1961) (James Madison).

A newspaper article written by Justice Iredell sheds further light on how the Intellectual Property Clause was viewed by those who ratified it. Writing under the pseudonym "Marcus," Justice Iredell published a series of newspaper articles purporting to supply "*Answers* to

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[4] The historical record amply supports Madison's claim that the Articles of Confederation left States unable to protect intellectual property. "Numerous examples may be found in our early history of the difficulties which the creators of items of national import had in securing protection of their creations in all States." *Goldstein* v. *California*, 412 U.S. 546, 556 n.12 (1973). Prominent examples included Noah Webster's efforts to to obtain copyright protection for his book, "A Grammatical Institute of the English Language" and the struggles of John Fitch and others to get patent protection for their inventions regarding the steamboat. *Id.*

Mr. [George] Mason's *Objections* to the New Constitution, recommended by the late Convention at Philadelphia." 1 The Debate on the Constitution 363 (Bernard Bailyn ed., 1993). Mason had objected that "'the Congress may grant monopolies in trade and commerce.'" *Id.* at 384. In answer Justice Iredell pointed out that the federal government is prohibited from preferring "'the ports of one State over those of another,'" *id.* at 385 (quoting U.S. Const. art. I, §9), and that every citizen "'shall be entitled to all privileges and immunities of citizens in the several States.'" *Id.* (quoting U.S. Const. art. IV, §2). "These provisions," he wrote, "appear to me to be calculated for the very purpose Mr. Mason wishes to secure." *Id.* Justice Iredell then posed a rhetorical question, "Can they be consistent with any monopoly in trade and commerce?" *Id.*

Directly following this question he dropped a footnote:

> One of the powers given to Congress is, "To promote the progress of science and useful arts, by securing for limited times to authors and inventors, the exclusive right to their respective writings and discoveries." I am convinced Mr. Mason did not mean to refer to this clause. He is a gentleman of too much taste and knowledge himself to wish to have our government established upon such principles of barbarism as to be able to afford no encouragement to genius.

Id. at 385 n.*. Justice Iredell thus sharply distinguished between officially sanctioned monopolies, which he said the Constitution outlawed, and patents, which he labeled an "encouragement to genius." *Id.* Without these, he hinted that he would regard the federal government as having been established on "principles of barbarism." *Id.*

A prominent early scholar of the Constitution, St. George Tucker, viewed the Intellectual Property Clause from the same perspective as that suggested by our textual analysis. He stated that the Intellectual Property Clause "not only declares the object, but points out the express *mode* of giving the encouragement; viz. 'by securing for a limited time to authors and inventors, the exclusive right to their respective writings and discoveries.'" St. George Tucker, View of the Constitution of the United States With Selected Writings 208 (1999).

What little information can be gathered from the relevant contemporaneous materials strongly suggests, then, that the Founders originally understood the Intellectual Property Clause to protect important personal rights. Patent rights for inventors were thought of in terms not of a mediated conflict between public and private interests, but in terms of a species of legal protection where "[t]he public good *coincides* . . . with the claims of individuals." The Federalist No. 43, at 288 (Jacob E. Cooke ed., 1961) (James Madison) (emphasis added). Justice Iredell's statements suggest an even more vigorous defense of patent rights, one where they are considered a necessary "encouragement to genius," 1 The Debate on the Constitution, at 385 (1993), and where their absence indicates a government founded on "principles of barbarism." *Id.*

This understanding of patent rights stands in considerable tension with the historical outlook expressed in *Graham* v. *John Deere Co.*, 383 U.S. 1 (1966). There the Court made statements suggesting that the Intellectual Property Clause must be interpreted narrowly, both to effectuate its stated purpose of "promot[ing] the Progress of Science and useful Arts," U.S. Const. art. I, §8, cl. 8, and to avoid allowing Congress to illegitimately grant monopolies. The Court in *Graham* began

its analysis by observing that "[t]he clause is both a grant of power and a limitation." 383 U.S. at 5. In place of an historical inquiry grounded on sources contemporaneous with the Founding, the Court made a sweeping claim regarding the Clause's pedigree. "It was written against the backdrop of the practices—eventually curtailed by the Statute of Monopolies—of the Crown in granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public." *Id.* From this historical characterization, the Court inferred in the next sentence that "Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose." *Id.* at 5–6.

To be sure, the historical view on which *Graham* relied has some support. It is true that Blackstone, "the preeminent authority on English law for the founding generation," *Alden* v. *Maine*, 527 U.S. 706, 715 (1999), reviewed the history of royal abuses and roundly condemned monopolies. *See* 4 William Blackstone, Commentaries *159. However, the Statute of Monopolies, 1623, 21 & 22 Jac. I c. 3, which largely reined in these abuses, contained an exception for "letters patent and grants of privilege for the term of fourteen years or under, hereafter to be made, of the sole working or making of any manner of new manufactures within this realm, to the true and first inventor and inventors of such manufactures . . . ." *Id.* This exception essentially created English patent law. F.W. Maitland, The Constitutional History of England 261 (H.A.L. Fisher ed., 1908). And, as the Court has recognized, "[m]uch American patent law derives from English patent law." *Sears, Roebuck & Co.* v. *Stiffel Company*, 376 U.S. 225, 230 n.6 (1964). Given this historical background, it is perhaps understandable that the Court in *Graham* would have emphasized the English prohibition on monopolies

as a countervailing force against which to interpret the scope of the Intellectual Property Clause.

Yet *Graham* has come under fire for its historical analysis by scholars intimately familiar with the Founding Era. In an article comprehensively reviewing the interpretive history of the Intellectual Property Clause, the author found *Graham* to be "unprecedented." Kenneth J. Burchfiel, *Revising the "Original" Patent Clause: Pseudohistory in Constitutional Construction*, 2 Harv. J. Law & Tech. 155, 181 (1989). Before *Graham*, Burchfiel writes, "the Supreme Court had recognized only three constitutional limitations." *Id.* at 181 n.153. These included the express condition that patents be granted only "for limited Times," U.S. Const. art. I, §8, cl. 8, the implied condition that patent rights are subject to reasonable state regulations, *see* 2 Harv. J. Law & Tech. at 181 n.153, and "the limitation of patent rights to domestic application." *Id.*

Based on his research, Burchfiel concluded that the "constitutional purpose," 383 U.S. at 5–6, limitation identified in *Graham* lacks historical support.[5]

> History provides no support for the conclusion that antimonopolist sentiment influenced the original interpretation of the intellectual property clause, or that considerations of public policy were regarded as imposing limitation in the grant of the patent power. To the contrary, the intellectual property clause's statement of purpose was often cited by early courts as

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[5] In a similar vein, another scholar has criticized *Graham* for unjustifiably elevating Thomas Jefferson's views above those of other Founders and for relying on Jefferson to justify its skeptical perspective toward patents. Edward C. Walterscheid, *The Use and Abuse of History: The Supreme Court's Interpretation of Thomas Jefferson's Influence on the Patent Law*, 39 J.L. & Tech. 195 (1999).

> evidence of constitutional solicitude for the quasi-natural property rights of inventors in the fruits of their mental labors.

2 Harv. J. Law & Tech. at 180.

Burchfiel's argument appears to stand on firmer ground than *Graham*, which carelessly combined English law with the personal views of Thomas Jefferson. *See* 383 U.S. at 5–6, 7–10. As we have seen, James Madison, writing in *The Federalist*, unreservedly defended the patent power, The Federalist No. 43, at 288 (Jacob E. Cooke ed., 1961) (James Madison), and Justice Iredell evidently regarded patent protection as a "quasi-natural property right." *See* 1 The Debate on the Constitution 385 n.* (Bernard Bailyn ed., 1993). Neither they nor any other advocate of the Constitution publicly described the Intellectual Property Clause as a necessary evil, to be hedged around with implied limitations lest patents become monopolies.

Both textual and historical inquiries tend to refute their claim that Congress may constitutionally exercise its patent power only if granting patent rights as to a particular subject matter serves the purpose of "promoting progress." Brief for Malla Pollack and Other Law Professors as *Amici Curiae* 6. In fact, the effort to unnaturally confine the words of the Intellectual Property Clause calls to mind the stern warning of Chief Justice Marshall:

> Powerful and ingenious minds, taking, as postulates, that the powers expressly granted to the government of the Union, are to be contracted by construction, into the narrowest possible compass, and that the original powers of the States are retained, if any possible construction will retain them, may, by a course

> of well digested, but refined and metaphysical reasoning, founded on these premises, explain away the constitution of our country, and leave it, a magnificent structure, indeed, to look at, but totally unfit for use.

Gibbons v. *Ogden*, 22 U.S. (9 Wheat. 1) 1, 222 (1824).

II. SECTION 101 IS NOT THE PROPER STATUTORY MECHANISM FOR ENSURING A REASONABLE FIT BETWEEN PURPORTED LIMITS ON CONGRESSIONAL POWER AND THE ISSUANCE OF PATENTS.

Farm Advantage's *amici* also argue that "[t]he purpose limitation in the Clause would be unnecessary if all conceivable 'exclusive rights' granted for 'limited times' to 'inventors' in their 'discoveries' would necessarily 'promote the progress of . . . the useful arts.'" Brief for Malla Pollack and Other Law Professors as *Amici Curiae* 7. This concern is misplaced.

The *amici* seem to misconceive the nature of §101. The sole question before the Court is whether sexually reproduced seeds are "eligible for patent protection." *Parker* v. *Flook*, 437 U.S. 584, 588 (1978). "Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas." *Diamond* v. *Diehr*, 450 U.S. 175, 185 (1981) (citations omitted). At the same time, "it is equally clear that a process is not unpatentable simply because it contains a law of nature or a mathematical algorithm." 437 U.S. at 590. For example, Watson and Crick's discovery of the structure of DNA, James D. Watson, The Double Helix 120 (Gunther S. Stent ed., 1980), falls outside the definition of patentable subject matter under § 101, while an invention employing that structure might not.

Even if (contrary to the analysis above) the Intellectual Property Clause were thought to limit Congress's power to the boundaries of a prescribed purpose, denying a large and important field like the development of genetically modified seed from coverage under §101 is wholly unnecessary to ensure a reasonable fit between the limitations on congressional power and the actual issuance of patents. Resolving a §101 question does not decide whether a particular invention, even one in the category of sexually reproduced seeds, ought to receive a patent. It only opens the door for an inventor to obtain a patent, subject to the conditions of novelty, 35 U. S. C. §102, and nonobviousness, *id.* at §103, required by statute. If the Constitution were thought to require a close connection between the standard for issuing patents and the language of the Intellectual Property Clause, surely the finer-grained inquiries under sections 102 and 103 better suit that purpose.

A similar form of confusion fails to differentiate between the §101 inquiry into statutory subject matter and the §102 inquiry into novelty. Another group of *amici* make this mistake when they argue that sexually reproduced plants fall outside the protection of §101 because, they say, "no potential utility plant patent holder has ever started from scratch." Br. Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 26. They cite the example of Sharp Shooter lettuce, which is covered by a utility patent. *Id.* at 19. They point out that Seminis, the patent holder, relied on the then freely available information to develop Sharp Shooter lettuce. *Id.*

Well-settled principles caution against confusing the question of patentable subject matter with questions of novelty or nonobviousness. "The question therefore of whether a particular invention is novel is 'wholly apart

from whether the invention falls into a category of statutory subject matter.'" *Diehr*, 450 U.S. at 190 (quoting *In re Bergy*, 596 F.2d 952, 961 (Cust. & Pat. App. 1979) (emphasis deleted). In fact, the Court has succinctly described the relationship among sections 101, 102, and 103 in the following terms:

> In this case, it may later be determined that the respondents' process is not deserving of patent protection because it fails to satisfy the statutory conditions of novelty under §102 or nonobviousness under §103. A rejection on either of these grounds does not affect the determination that respondents' claims recited subject matter which was eligible for patent protection under §101.

Id. at 191. For these reasons, the argument that sexually reproduced plants fail to qualify for protection under §101 because seed patents somehow fail the tests of novelty or nonobviousness must be rejected.

III. THIS COURT'S PRECEDENTS CONSTRUING 35 U. S. C. §101 DO NOT REQUIRE CONGRESS TO EXPRESSLY CLASSIFY SEXUALLY REPRODUCED PLANTS AS PATENTABLE SUBJECT MATTER IN ORDER FOR THEM TO RECEIVE SUCH LEGAL PROTECTION.

Farm Advantage's *amici* make a further argument based on their contention that the Intellectual Property Clause permits Congress to authorize the issuing of patents only when doing so serves the purpose of "promot[ing] the Progress of Science and useful Arts." U.S. Const. art. I, §8, cl. 8. Given this constitutional limitation, they say, "[t]he broad wording of 35 U. S. C. §101, therefore, is not determinative." Brief for Malla Pollack and Other Law Professors as *Amici Curiae* 10.

In particular, they urge the Court to "void the patents at issue as constitutionally infirm—regardless of what standard statutory construction principles alone would suggest." *Id.* at 14. To justify this extreme remedy they reason that patents issued without an express determination by Congress that they serve the purpose of promoting progress are void because they lie beyond Congress's power to authorize.

> If Congress mistakenly enacts a statute whose words might be read to allow patent protection outside the scope of Congress' progress determination, these purported rights are void, because they are beyond Congress' power. The Court, therefore, should not mechanically enforce the broadest possible reading of statutory language. This Court should, instead, vindicate the legislative process by waiting for Congress in the first instance to determine how to promote progress.

Id. at 9–10.

The *amici* thus make two claims. They insist that Congress is *constitutionally* required to assess whether giving a particular subject matter patent protection serves the constitutional purpose of "promot[ing] the progress of Science and the useful Arts." U.S. Const. art. I, §8, cl. 8. (We have already shown that this constitutional claim lacks support.) And, though they are less clear on this point, they also appear to say that the Court should refrain from deciding whether disputed subject matter is patentable under §101 until Congress has first resolved that question.

This approach to interpreting §101 is foreclosed by *Diamond* v. *Chakrabarty*, 447 U.S. 303 (1980). There the Court, asked to decide "whether a live, human-made micro-organism is patentable subject matter under 35

U. S. C. §101," *id.* at 305, rejected the argument that "micro-organisms cannot qualify as patentable subject matter until Congress expressly authorizes such protection." *Id.* at 314. It was argued that because "genetic technology was unforeseen when Congress enacted §101 . . . resolution of the patentability of inventions . . . should be left to Congress." *Id.* In reliance on dicta in *Parker* v. *Flook*, 437 U.S. 584, 596 (1978), the Court was urged to "'proceed cautiously when . . . asked to extend patent rights into areas wholly unforeseen by Congress.'" *Chakrabarty*, 447 U.S. at 314–15 (quoting 437 U.S. at 584).

The Court acknowledged that "Congress, not the courts, must define the limits of patentability." *Id.* at 315. However, the Court rejected the inference that courts must await an express finding by Congress that disputed subject matter is patentable. "Congress has performed its constitutional role in defining patentable subject matter in §101; we perform ours in construing the language Congress has employed." *Id.*

At the same time, the Court in *Chakrabarty* explained the scope of its duty when construing §101:

> [O]ur obligation is to take statutes as we find them, guided, if ambiguity appears, by the legislative history and statutory purpose. Here, we perceive no ambiguity. The subject-matter provisions of the patent law have been cast in broad terms to fulfill the constitutional and statutory goal of promoting "the Progress of Science and the useful Arts" with all that means for the social and economic benefits envisioned by Jefferson. Broad general language is not necessarily ambiguous when congressional objectives require broad terms.

Id.

The Court emphasized that "*Flook* did not announce a new principle that inventions in areas not contemplated by Congress when the patent laws were enacted are unpatentable *per se*." *Id.* Otherwise, the Court reasoned, such a principle would "frustrate the purposes of the patent law . . . [by] conflict[ing] with the core concept of the patent law that anticipation undermines patentability." *Id.* at 315, 316. Furthermore, requiring Congress to expressly categorize subject matter as patentable *in advance* of its being eligible for patent protection would be not only unnecessary, but impossible. "Congress employed broad general language in drafting §101 precisely because such [pathbreaking] inventions are often unforeseeable." *Id.* at 316 (footnote omitted).

Similar reasoning militates against an argument urged by other *amici*. The American Corn Growers Association and the National Farmers Union argue that "the breadth of section 101 that allowed the bacteria to be patented in *Chakrabarty* is derived from a failure of Congress to specifically reject an extension of such power over the bacteria." Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 11. If §101 does not require Congress to expressly categorize subject matter as patentable in order for it to enjoy the protection of patent law, that provision does not extend its reach because Congress omits to bar that extension. *Chakrabarty* teaches that once Congress enacted the broad language of §101, it needed to do nothing more for patent applications based on unforeseeable technologies to be covered as statutory subject matter. Once Congress enacted the broad language of §101, the extension of patentability into fields unknown to the legislative drafters occurs not because Congress omitted to "specifically reject an extension of such power," *id.*, but because Congress adopted language

deliberately chosen to allow for the patentability of the unknown.

IV. CERTAIN OBJECTIONS TO ALLOWING FOR THE PATENTABILITY OF SEXUALLY REPRODUCED PLANTS MAY BE DISMISSED AS IRRELEVANT.

A. Attacks on the Patent System Itself Are Immaterial.

Petitioners' *amici* raise several objections to the patentability of sexually reproduced plants that amount to an attack on the patent system itself. They allege, "Patenting plant varieties hampers innovation as breeders are increasingly unable to use a patented variety for any commercial or research purpose without authorization and a licensing agreement from the patent holder. As the right of plant breeders and companies to exclude others from use of their research expands, all genetic resources are increasingly underutilized." Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 16. The *amici* explain why they believe that patent rights "hamper[ ] innovation," *id.*:

> Intellectual property rights restrict the number of suppliers in a market in an attempt to provide incentives for innovation. Contrary to the assertion of the Respondent, there is no evidence that extension of utility patents to plants has actually stimulated invention. Rather, utility patents create incentive to acquire control of basic materials, limit access to them, and seek further patent protection as a means of continuing control.

Id. at 22.

These arguments require only a brief response. They amount to an attack on the legitimacy of intellectual property rights themselves, which are so well-established

by constitutional text, congressional enactments, judicial decisions, and settled practice as to require no defense. More fundamentally, the *amici* argue that experience has demonstrated the folly of "securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, §8, cl. 8. Whether they are correct is not a matter to be decided by a court, but by the American people who may (if they wish) abolish it through constitutional amendment. *See id.* at art. V.

B. Allegations of Oppressive Business Practices or Anticompetitive Conduct Are Immaterial.

Petitioners' *amici* allege that granting utility patents for sexually reproduced seed has led to oppressive business practices. The *amici* complain of seed agreements with venue clauses that unfairly favor the patent holder or impose unfair costs on the farmer. Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 29. They also complain that the agreements contain "limited warranties that significantly narrow the liability of the patent holder or seed seller for any and all losses, injuries or damages resulting from use or handling of the seed." *Id.*

The *amici* also complain that granting patents for sexually reproduced seed has encouraged anticompetitive conduct. "Prices for seed have risen dramatically since 1985 and the extension of utility patents to sexually reproducing plants have undoubtedly contributed to this increase." *Id.* at 26 (footnote omitted). The *amici* also point to industry consolidation.

> Since the expansion of utility patent protection to sexually reproducing plants, the number of independent seed companies has declined significantly. . . . The result has been an increase in market share for the large seed companies and an increasing involvement by large chemical companies looking for ways to distribute their other products such as herbicides.

Id. at 22.

Neither oppressive business practices or anticompetitive conduct, even if proven, are relevant to the question presented. Patents may be misused. When they are, "patents afford no immunity from the antitrust laws." *International Salt Co.* v. *United States*, 332 U.S. 392, 396 (1947). But this Court has long observed a sharp distinction between patents and monopolies. *Seymour* v. *Osborne*, 78 U.S. (11 Wall.) 516, 533–34 (1870). More to the point, allegations of anticompetitive conduct are irrelevant because they have nothing to do with the question presented.

C. Allegations That the Patenting System Imposes Undue Burdens on Farmers Are Immaterial.

Petitioners' *amici* charge that giving the developers of sexually reproduced seed intellectual property protection has the result of unduly burdening farmers. "If farmers are not being hauled off their fields and into court, they are spending valuable time reviewing the myriad of licensing and 'technology user' agreements now necessitated by seed companies selling their patented seed." Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 29. Somewhat melodramatically the *amici* protest that "Congress never envisioned turning the American farmer into a 'poster child' for patent infringement," *id.* at 30, and that denying patent protection to sexually reproduced plants is necessary for "farmers and plant breeders to remain more than corporate 'serfs' renting the limited available germplasm from a handful of companies." *Id.*

These arguments too are immaterial to the question presented. Congress has not exempted the American farmer, noble as he is, from the patent laws. Whether affirming the status of sexually reproduced seeds as patentable subject matter under 35 U. S. C. §101 will help or injure the American farmer is ultimately a question for the political branches to decide. *Warner-Jenkinson Co.* v. *Hilton Davis Chemical Co.*, 520 U.S. 17, 28 (1997).

D. Charges of Genetic Erosion Are Immaterial.

Petitioners' *amici* also charge that offering patent protection to sexually reproduced seeds will have dire effects on agriculture. "[C]urrent United States National Seed Storage Laboratory holdings suggest that since 1903 the U.S. has lost 94.1% of beet varieties, 96.1% of sweet corn varieties, 92.8% of lettuce varieties, and 80.6% of tomato varieties." Brief for American Corn Growers Association & National Farmers Union as *Amici Curiae* 14 (footnote omitted). Once again, the *amici* have offered up a red herring. The problem of "maintaining a genetically diverse agriculture," *id.*, is political question that properly belongs with Congress. It is immaterial to the question presented.

CONCLUSION

For the foregoing reasons the judgment of the U.S. Court of Appeals for the Federal Circuit should be affirmed.

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IN THE
Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (d/b/a Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (d/b/a Siouxland Seeds, Inc.), KEVIN WOLFSWINKEL, TIM KAMSTRA, AND TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF *AMICUS CURIAE* OF THE BIOTECHNOLOGY INDUSTRY ORGANIZATION IN SUPPORT OF RESPONDENT SEEKING AFFIRMANCE

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QUESTION PRESENTED

Whether plants developed by human intervention are statutory subject matter for utility patents under 35 U.S.C. § 101 *et seq.*?

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BRIEF *AMICUS CURIAE*

Pursuant to Supreme Court Rule 37.3(a), on written consent of all parties filed with the Court concurrently with this submission, the Biotechnology Industry Organization ("BIO") respectfully submits this brief *amicus curiae* in support of Respondent.[1]

INTERESTS OF THE *AMICUS CURIAE*

Amicus curiae, the Biotechnology Industry Organization, is a trade association consisting of over 900 companies, academic institutions, and biotechnology centers.[2] BIO members file thousands of patent applications each year for inventions ranging from fundamental technological breakthroughs to important commercial refinements of existing technology. Thus, BIO is concerned with the proper and consistent interpretation of the scope of patentable subject matter for utility patents, 35 U.S.C. § 101.

The biotechnology industry in the United States has the potential to radically increase current levels of agricultural production, dramatically improve the quality of health care, and measurably contribute to a cleaner environment. Agricultural biotechnology, for example, promises to

---

[1] Pursuant to Rule 37.6, *amicus curiae* states that no person or entity other than BIO, its members (excluding Respondent Pioneer), or its counsel has made any monetary contribution to the preparation or submission of this brief. Further, no counsel for Petitioner or Respondent authored this brief in whole or in part.

[2] BIO advises the Court that Respondent Pioneer Hi-Bred International, Inc. is a member of the association. However, Respondent was excluded from all BIO deliberations and discussions regarding this *amicus* brief.

improve food production by enhancing crops' resistance to natural enemies and harsh environmental conditions, thereby lessening reliance on pesticides and other crop inputs, reducing farmers' costs (including fuel costs), and controlling soil erosion and compaction. In addition, the biotechnology industry makes substantial contributions to the U.S. economy—in 1999, for example, the industry as a whole invested some $9.9 billion in research and development, and the agricultural biotechnology sector alone generated $2.3 billion in revenues.

BIO members both hold and continue to apply for patents on inventions embodied in a wide range of seeds and seed-grown plants. The Patent and Trademark Office has been granting such patents without any suggestion of doubt for over 15 years. In response to decisions of this Court and the Courts of Appeals, BIO members have relied on the availability of utility patent protection for plant inventions to plan and make significant commercial investments, to direct their research and development activities, and to launch and develop products and product lines. Like other innovation-based U.S. industries, BIO members depend on the availability, as confirmed by the courts and the PTO, of utility patents. BIO thus endorses the holding of the U.S. Court of Appeals for the Federal Circuit that inventions embodied in seeds and seed-grown plants are patentable subject matter under 35 U.S.C. § 101.

BIO members also protect intellectual property they develop that is embodied in plant varieties—especially advances that do not rise to the standards required for utility patents—using the more limited rights conferred by the Plant Patent Act ("PPA"), 35 U.S.C. § 161 *et seq.*, and the Plant Variety Protection Act ("PVPA"), 7 U.S.C. § 2321 *et seq*. Because the PPA and the PVPA protect different aspects of BIO members' agricultural innovations than do utility patents, BIO has a strong interest in ensuring that the

statutes are interpreted in a manner consistent with the role the more limited forms of intellectual property play *vis-à-vis* utility patents.

Because BIO members' innovations span the whole spectrum of inventive activity, BIO can provide the Court with a broad perspective on the need for intellectual property protection, and on how different kinds of intellectual property protection can interact and overlap without conflict.

Accordingly, BIO files this brief in support of Respondent recommending affirmance of the decision of the U.S. Court of Appeals for the Federal Circuit, which held that seeds and seed-grown plants constitute patentable subject matter under 35 U.S.C. § 101.

SUMMARY OF THE ARGUMENT

The only constant in the "useful Arts," U.S. Const. art. I § 8, cl. 8, is change. Technology can now produce products and processes that the Founders, or even Congresses only decades ago, could never have imagined. Plants, which were once thought of as produced solely through forces of nature (and therefore not patentable), are now recognized as objects capable of being produced through the specific and directed efforts of individuals.

Because Congress understood that new and unforeseeable types of inventions—like inventions embodied in plants—would emerge from the inventive efforts of our citizens, it crafted a broad and flexible utility patent statute. Now that agricultural biotechnology has progressed to the point that it can yield advances that pass the tests of novelty, usefulness, non-obviousness, and full disclosure, 35 U.S.C. §§ 101-103, 112, its inventions merit the broader scope of utility patent protection.

Congress also decided to confer lesser forms of protection for plant-related innovations that do not meet the high standards required for a utility patent. Indeed, at the time the Plant Patent Act ("PPA") was passed in 1930, it was probably unimaginable that any new plant produced through conventional plant breeding techniques could ever meet the requirements for utility patents (*i.e.* that the plant be new, non-obvious, and useful, and, in particular, susceptible of full description). The PPA, like the Plant Variety Protection Act ("PVPA") that followed some 40 years later, gives those who discover or produce hybrids or plant varieties by fairly obvious and well-known procedures only limited exclusive rights for their efforts.

As the Patent and Trademark Office ("PTO") and the U.S. Court of Appeals for the Federal Circuit have recognized, there is nothing inconsistent about these parallel statutory schemes, which protect different subject matter (*i.e.* inventions embodied in plants on the one hand, and new plant varieties on the other) by conferring different exclusive rights based on different tests for eligibility. This remains true even though it is possible for the different innovations to manifest themselves in the same plant.

Moreover, if Congress were in any way concerned about overlapping forms of intellectual property rights in plants, it had ample opportunities to express that concern through "corrective" legislation in the more than 15 years that the PTO has granted utility patents for plant inventions. Indeed, rather than acting to correct the practice of the PTO, Congress has given every indication that it is aware of, and pleased with, the full panoply of rights available to those who develop plant inventions and new plant varieties. Accordingly, this Court should affirm the holding of the Federal Circuit that the utility patent statute means exactly what it says: "[w]hoever invents . . . any new and useful . . .

manufacture[3] . . . may obtain a patent therefor." 35 U.S.C. § 101.

ARGUMENT

I. Utility Patents, § 161 Plant Patents, and Plant Variety Protection ("PVP") Certificates Are Distinct Forms of Protection for Different Types and Degrees of Innovation.

Agricultural science has changed radically since Congress first established the modern patent system. Plant breeding progressed in the 1920s to the point that new varieties could be bred, identified, and replicated—in other words, to the point that plants developed by breeding efforts deserved some measure of intellectual property protection, even if their products (new varieties) or processes of production (breeding) were not sufficiently "inventive" to merit utility patent protection. More recently, plant biotechnology has crossed the utility patent threshold. Scientific advances dating from the late 1970s have enabled inventors to produce new, useful, non-obvious and readily reproducible plants through directed and specific genetic modifications. Today, inventors are able to combine detailed, gene-by-gene knowledge of plant genomics with molecular marker technologies to guide their breeding to produce new and improved plant varieties that are not transgenic, but would never occur in nature.

Our intellectual property laws have accommodated these developments: Congress has provided three distinct yet compatible forms of intellectual property protection for these different types and degrees of innovative activity,

---

[3] Plant inventions may fall into one or more statutory categories of invention (*i.e.* manufactures or compositions of matter). For simplicity, BIO focuses in this brief on plants that are "manufactures."

namely (1) utility patents under 35 U.S.C. § 101 *et seq.*, for inventions embodied in plants; (2) so-called "plant patents" under the PPA, 35 U.S.C. § 161 *et seq.* (hereinafter "§ 161 plant patents") for asexually reproduced plant varieties; and (3) plant variety protection ("PVP") certificates under the PVPA, 7 U.S.C. § 2321 *et seq.*, for sexually reproduced plant varieties. These distinct legal instruments protect different subject matter—even though that subject matter may coexist in the same plant in the farmer's field—using different eligibility tests, and they confer different rights on their owners.

A. Intellectual Property Rights for Plant Innovations Have Evolved in Tandem with Scientific Advances.

Our patent system, which dates almost to the founding of the Republic, saw its first heyday during the Industrial Revolution. While George Washington in his first annual address to Congress noted that "[t]he advancement of agriculture, commerce, and manufactures by all proper means will not, I trust, need recommendation,"[4] little attention was paid to applying the patent system to plant-related innovations until the early 20th century. *See generally* Cary Fowler, *The Plant Patent Act of 1930: A Sociological History of its Creation*, 82 J. Pat. & Trademark Off. Soc'y 621, 631 (2000).

At the time Congress was considering the Plant Patent Act of 1930, most doubted that a new plant could ever meet all the statutory requirements for patentability (*e.g.*, that a new plant could be described with particularity). *See id.* at 641-42. There was also a general perception that plant

[4] George Washington, First Annual Message to Congress (Jan. 8, 1790), *reprinted in* The Papers of George Washington 543, 545 (W.W. Abbott & Dorothy Twohig, eds. 1987).

breeding was simply not an "inventive" activity. For example, particular strains of ornamental flowers or fruit trees, such as the "Delicious" apple, were more often the result of a grower's chance discovery than of any purposeful development. *See id.* at 640-41. Additionally, plants were perceived by many to be products of nature, outside the scope of patentable subject matter under R.S. § 4886, the forerunner of today's 35 U.S.C. § 101.

More pragmatically, utility patent eligibility requirements were thought to present an insurmountable barrier for plant varieties. A patent application must describe the "invention" with sufficient particularity to enable someone skilled in the relevant technological field to make and use the claimed invention without undue experimentation. *See* 35 U.S.C. § 112. For new plant varieties, the would-be practitioner in 1930 would have needed direct access to the original grower's biological stock—no amount of verbal or textual description could provide instructions that would, with a reasonable degree of experimentation, enable another to "recreate" a plant identical to the variety that the grower made through his plant breeding efforts.

Nevertheless, as the nursery industry became a commercial enterprise of national scope, plant propagators' and breeders' need for some form of intellectual property protection for their efforts grew. *See* Fowler at 630-31. In response, Congress enacted the PPA in 1930, creating a new legal instrument, the plant patent, to protect the output of plant breeding efforts. PPA, *now codified at* 35 U.S.C. § 161 *et seq.* The requirements for and attributes of a § 161 plant patent are purposefully stated in different terms than those used to define requirements for and characteristics of utility patents. Whereas an invention under 35 U.S.C. § 101 must be "new and useful" (and meet the criteria of §§ 102-03, and § 112 as well) to obtain utility patent protection, a

plant variety need only be "distinct and new" to be protected by a plant patent, 35 U.S.C. § 161. Moreover, § 161 plant patent applications are expressly exempt from the description requirements of 35 U.S.C. § 112 so long as "the description is as complete as is reasonably possible." 35 U.S.C. § 162.

Only asexually (vegetatively) propagated plants were made eligible for PPA protection; the PPA expressly excludes tuber-propagated plants as well as "plant[s] found in an uncultivated state." 35 U.S.C. § 161. The restricted scope of the Act again reflected the scientific understanding of the times: in 1930 there was no consensus over whether sexually (seed) propagated plants and tubers could in fact be distinguished from naturally occurring plants. *See* Fowler at 641. Congress hoped to avoid that pitfall by limiting PPA protection to asexually propagated plant varieties—such as those produced by grafting a part of one plant variety onto another. *See id.*

By 1970, conventional beliefs had shifted and scientific understanding of plant biology had again advanced. Concerns and doubts as to our ability to distinguish new sexually propagated plant varieties from their naturally occurring predecessors had abated. That year, Congress extended non-patent protection to seed-propagated plants by enacting the Plant Variety Protection Act ("PVPA"), codified at 7 U.S.C. § 2321 *et seq.*

Like the PPA, the PVPA offers limited protection for the output of plant breeding efforts—new plant varieties—that typically fall short of the standards required for utility patents. The basic requirement for obtaining a Plant Variety Protection ("PVP") certificate is similar to that for securing a § 161 plant patent: the plant variety must be new, distinct, uniform, and stable. 7 U.S.C. § 2402. Similarly, an application for a certificate must generally provide a description that is "adequate or as complete as is reasonably

possible," 7 U.S.C. § 2422, but it need not provide the degree and detail of disclosure needed to enable a third party to recreate the new plant variety, as is required of utility patent specifications under 35 U.S.C. § 112.

Throughout the latter half of the 20th century, our understanding of plant biology and plant development technology also developed in another direction: biotechnology. As a result of progress in the scientific fields that propel biotechnology (*e.g.*, molecular genetics, molecular biology, plant physiology), scientists learned how to specifically and precisely manipulate a plant's genome, either to over- or under-express specific plant genes, or to express exogenous genes (*i.e.* genes not found in the natural genome of the plant) that are intentionally inserted into the plant's genetic makeup. This kind of specific, reproducible, and focused inventive activity can meet all the threshold criteria for utility patents—novelty, usefulness, and non-obviousness, 35 U.S.C. §§ 101-103. Most importantly, these types of plant inventions can be fully and precisely described (using a procedural device, the deposit of a sample, that itself developed over the second half of the century[5]) in a way that enables a third party to reproduce the invention without undue experimentation, thereby satisfying the requirements of 35 U.S.C. § 112.

Thus, utility patents have come to be available for plants—more specifically, for biotechnology inventions

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[5] This device was originally developed for microbiological inventions, but has been adopted for plants: samples of seeds or plant cell tissue cultures are made freely available to the public upon the grant of the patent. *See In re Argoudelis*, 434 F.2d 1390 (C.C.P.A. 1970); *see also* 37 C.F.R. §§ 1.801-09. These "descriptions" allow someone practiced in the field to grow a genetic duplicate of any deposited plant described in a utility patent.

embodied in plants. The PTO relied on the authority that Congress had already provided in the adaptable and broadly worded utility patent statute to issue the first plant-related utility patents in 1975,[6] and to begin issuing them on a more regular basis in 1985. And because "[p]atentability shall not be negatived by the manner in which the invention was made," 35 U.S.C. § 103(a), utility patents are available not only for inventions involving recombinant genetic manipulation of plants, but for all plant inventions that meet the statutory criteria of novelty, usefulness, and non-obviousness.

B. Utility Patents, § 161 Plant Patents, and PVP Certificates Protect Different Types and Degrees of Inventiveness and Provide Different Forms of Intellectual Property Rights.

Consistent with the different eligibility standards for securing a utility patent, a § 161 plant patent, or a PVP certificate, the three instruments confer different exclusive rights on the successful applicant. A § 161 plant patent or a PVP certificate grants rights that are defined exclusively in terms of the protected plant variety. For example, a § 161 plant patent gives the holder the right to "exclude others from asexually reproducing the plant or selling or using the plant so reproduced." 35 U.S.C. § 163. The rights associated with a PVP certificate (*i.e.* giving the plant breeder the right to "exclude others from selling the variety, or offering it for sale, or reproducing it, or importing it, or exporting it, or using it in producing [as distinguished from developing] a hybrid or different variety therefrom," 7 U.S.C. § 2483(a)(1)) are broader, and extend to any plant or variety that is "essentially derived from" or "not clearly distinguishable from a protected variety," or "whose

[6] U.S. Patent No. 3,861,079 (issued Jan. 21, 1975).

production requires the repeated use of a protected variety," and to harvested material derived from such varieties. 7 U.S.C. § 2541(c). In other words, PPA and PVPA rights are limited in scope to the *specific plant varieties protected*; they do not give the holder any rights over other plants with the same or similar characteristics. In addition, a PVP certificate holder cannot restrict uses of the variety that fall within a series of express exemptions relating to saving seeds, research, transportation, and advertising. *See* 7 U.S.C. §§ 2543-45.

A utility patent, by contrast, confers a broader range of protection, and does so with reference to objectively and precisely defined attributes of the invention. Thus the claims of a utility patent will typically extend not only to the specific example (*i.e.* the plant) described in the specification, but also to other embodiments (plants) that share the defining characteristics of the invention.

For example, if a utility patent describes a plant cell line engineered to produce human antibodies with useful and novel functional properties, claims may be drawn (*i.e.* the patent rights may extend) not only to the plant cell itself, but also to a plant grown from the cell line, methods of making the plant, methods of using the plant to produce antibodies, the antibodies themselves, and if appropriate, the introduced genes that cause the cell line to exhibit its desirable functional properties.[7] Similarly, a utility patent that describes an herbicide-resistant plant could give the inventor rights not limited to the plant alone, but to the inventions that are manifested in any plant having the same characteristics that make the original plant herbicide-

[7] *See, e.g.*, U.S. Patent No. 6,040,498 (issued Mar. 21, 2000) (claiming duckweed plants modified to produce various proteins including antibodies, protein hormones, and tumor suppressors).

resistant.[8] In sum, in exchange for satisfying more stringent and demanding standards for patentability (*i.e.* novelty, usefulness, non-obviousness, and disclosure), utility patents grant exclusive rights to the inventor that are much broader than those associated with either § 161 plant patents or PVP certificates.

C. Utility Patents, § 161 Plant Patents, and PVP Certificates Are Complementary and Serve the Public Interest.

The agricultural biotechnology industry is thriving, thanks in large part to the inventive activity encouraged by the availability of utility patent protection as a complement to PPA and PVPA protection. Patents have issued on corn plants expressing *Bacillus thuringiensis* (*Bt*) insecticidal proteins;[9] herbicide-resistant crops, such as sugar beets containing the ROUNDUP READY™ gene;[10] sunflowers "conventionally" bred to contain relatively high levels of the more healthful unsaturated oleic acid;[11] bananas, tomatoes, and other fruit recombinantly modified to contain edible vaccines;[12] plants that produce nutritionally superior mixtures of dietary amino acids;[13] and maize with increased

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[8] *See, e.g.*, U.S. Patent No. 4,761,373 (issued Aug. 2, 1988) (claiming any maize plant expressing an altered acetohydroxyacid synthase enzyme, resulting in tolerance to exposure to certain chemical herbicides).

[9] *See* U.S. Patent No. 5,484,956 (issued Jan. 16, 1996).

[10] *See* U.S. Patent No. 6,204,436 (issued Mar. 20, 2001).

[11] *See* U.S. Patent No. 4,627,192 (issued Dec. 9, 1986).

[12] *See* U.S. Patent No. 5,861,277 (issued Jan. 19, 1999).

[13] *See, e.g.*, U.S. Patent No. 5,508,468 (issued Apr. 16, 1996).

water stress tolerance.[14] Though none of these inventions could have been envisioned a century ago, the incentives provided by utility patents spurred the creation of crops with the potential to increase the efficiency of agricultural production and to improve the health of many in this country and around the world.

Individually and in concert, the three intellectual property schemes applicable to plants promote the useful arts and facilitate commerce. They meet different commercial needs, demand compliance with substantively distinct requirements, and encourage different innovative activities—all for the benefit of the public.

For example, by protecting technological advances embodied in plants that cannot necessarily satisfy the more rigorous standards of the utility patent statute, the PPA and PVPA nevertheless provide a measure of enforceable commercial protection for every important new plant variety. Even when more than one statute might apply, the PPA and PVPA are effective *alternative* or *complementary* forms of legal protection to utility patents. Many plant growers and distributors, for example, may be better served by the lesser PPA or PVPA protections, because they come at a lower cost and with less effort than a utility patent.

If an inventor decides to pursue a utility patent rather than—or in addition to—a § 161 plant patent or a PVP certificate, he will have to supply a detailed description of "the manner of making and using" his plant-related invention, as uniquely required by 35 U.S.C. § 112. This requirement benefits the public by adding the contents of the patent's disclosure to the storehouse of scientific and technical knowledge—in this case, knowledge about how to make plants with the claimed characteristics and attributes.

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[14] *See* U.S. Patent No. 5,780,709 (issued July 14, 1998).

In contrast, the minimal description required for a PVP certificate or a § 161 plant patent cannot teach the public how to impart the desirable characteristics of the variety it concerns, such as expression of a disease resistance gene, into other varieties.

D. Concurrent Intellectual Property Protection in a Single Physical Article Does Not Suggest a Conflicting Statutory Scheme.

The suggestion that a unitary object, such as a single plant, may be protected by more than one form of intellectual property is not new to intellectual property law. As this Court[15] and other tribunals[16] have long recognized, there is not necessarily a one-to-one correspondence between a physical object and the intellectual property that it may embody. One could easily envision a patented disk drive storing copyrighted software, or a desktop computer having patented circuitry, ornamental features claimed in a design patent, and a control panel arranged in a recognizable configuration protected as trade dress.

Just as a single act of misappropriation—say, replicating a desktop computer or a plant—may infringe multiple and distinct intellectual property rights existing in that article, the creation of a single new article may give rise to more than one statutory entitlement to protection. This is

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[15] *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 121 S. Ct. 1255, 1262 (2001) (patentable features and protected trade dress may in theory coexist in a single device if the elements of the trade dress are not functional).

[16] *See, e.g., In re Yardley*, 493 F.2d 1389, 1393-95 (C.C.P.A. 1974) (because ornamental design is statutory subject matter under both copyright and design patent statutes, author-inventor may secure rights under both schemes, citing *Mazer v. Stein*, 347 U.S. 201, 217 (1954)).

the case with plant innovations. A single disease-resistant soybean plant, for example, could simultaneously (1) *embody* the invention of inserting a resistance gene into the genome of a legume (such as a lentil or a soybean), for purposes of 35 U.S.C. § 101, and (2) *constitute* a new, distinct, uniform, and stable variety of soybean plant protectable under the PVPA.

Far from being in conflict, the utility patent regime operates in harmony with the PPA and PVPA. These statutes protect different innovations that Congress has determined that it is in the public interest to promote, and they afford different combinations of enforceable rights. Of course the scope of rights obtained concurrently under two distinct statutes will likely be broader than the rights conferred by either statute alone. But that accumulation of rights does not take away from the inventor any rights that he possesses by virtue of any single intellectual property instrument—neither statute compels him to do or refrain from doing anything that the other forbids. If the inventor has simultaneously produced a new plant variety that Congress protects under the PPA or PVPA, as well as an innovation that manifests itself in the plant and is sufficiently inventive to meet Congress's tests for utility patent protection, he is entitled to be protected by both of Congress's statutory schemes. There simply is no conflict between these distinct and complementary statutes.

II. This Court and Congress Have Made Clear That Plant Inventions May Be Protected by Utility Patents.

Neither this Court nor Congress has been troubled by the broad and flexible reach of the utility patent statute as it applies to plants. Congress wisely designed a utility patent statute that could accommodate scientific inventions that were unforeseeable at the time of its passage. This Court has understood and given force to Congress's flexible

design in decisions such as *Diamond v. Chakrabarty*, 447 U.S. 303 (1980). In the specific case of plant inventions, it should again read the utility patent statute broadly—particularly because Congress has repeatedly indicated that it is aware of, and even endorses, the complementary intellectual property systems applicable to plants inventions and plant varieties.

A. This Court Reads the Utility Patent Statute Broadly

Nothing in the language of 35 U.S.C. § 101 excludes plants from its coverage. To the contrary, § 101's expansive scope is quite clear on its face:

> Whoever invents or discovers *any new and useful* process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Id. (emphasis added). The issue in this case is *not* whether "*anything* under the sun that is made by man" is patentable subject matter under § 101. *Chakrabarty*, 447 U.S. at 309 (emphasis added). Instead, the question presented here is a much more specific one: whether plants resulting from inventive human activity are "manufactures" or compositions of matter within the meaning of § 101.

Indeed, the oft-quoted reference to "anything under the sun that is made by man"—cited and disparaged by Petitioner—is a red herring. The critical answer that this Court supplied in *Chakrabarty* was to the question of whether there was any confusion as to the scope of the term "manufacture" as used in § 101. As the Court held, the answer is an emphatic "no." The Court explained,

> In cases of statutory construction we begin, of course, with the language of the statute. And

> "unless otherwise defined, words will be interpreted as taking their ordinary, contemporary common meaning." We have also cautioned that courts "should not read into the patent laws limitations and conditions which the legislature has not expressed."
>
> Guided by these canons of construction, this Court has read the term "manufacture" in § 101 in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." . . . In choosing such expansive terms as "manufacture" and "composition of matter," modified by the comprehensive "any," Congress plainly contemplated that the patent laws would be given wide scope.

Id. at 308 (citations omitted).

Thus, the *Chakrabarty* decision makes clear that § 101 must be interpreted to find that "new and useful" inventions embodied in plants and plant varieties are "manufactures" eligible for utility patents, as long as they are produced "from raw or prepared materials by giving these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." *Id.* If they are, and they meet the other requirements of the statute (*i.e.* they are novel, useful, non-obvious, and fully described), they are entitled to full utility patent protection.

B. Congress Has Repeatedly Made Clear That It Is Aware of, and Endorses, the Issuance of Utility Patents for Plant Inventions

Congress has consistently demonstrated that it is aware of, and supports, the complementary regimes of utility patents, PPA, and PVPA protection. Indeed, an expansive interpretation of the term "manufacture" in 35 U.S.C. § 101, as mandated by *Chakrabarty*, is perfectly consistent with Congress's understanding of and support for the distinct forms of intellectual property protection made available for plants under U.S. law.

For over fifteen years, since the PTO's decision in *Ex parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985), which gave a green light to plant-related utility patents, Congress has been aware of the fact that multiple distinct forms of legal protection are available for intellectual property embodied in a plant. The parties in this appeal have extensively documented Congress's deliberations regarding the PPA and the PVPA, and BIO will not repeat that history here. BIO wishes to bring to the Court's attention, however, several examples of legislative history outside the context of the PPA's and PVPA's enactment that serve to illustrate Congress's awareness and endorsement of the complementary intellectual property regimes.

Having passed some 15 acts making substantive changes to the patent statutes since 1985,[17] including several

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[17] *See* American Inventors Protection Act of 1999, Pub. L. No. 106-113 § 4001 *et seq.*, 113 Stat. 1501 (1999); Economic Development Administration and Appalachian Regional Development Reform Act of 1998, Pub. L. No. 105-393, 112 Stat. 3596 (1998); Plant Patent Amendments Act of 1998, Pub. L. No. 105-289, 112 Stat. 2780 (1998); Omnibus Consolidated Appropriations Act of 1997, Pub. L. No. 104-208 § 616, 110 Stat. 3009 (1996); Biotechnological Process Patents Act, Pub. L. No. 104-41, 109 Stat. 351 (1995); Uruguay Round Agreements Act, Pub. L. No. 103-465 §§ 531-34, 108 Stat. 4809, 4982-90 (1994); North American Free Trade Agreement Implementation Act, Pub. L. No. 103-182 § 331, 107 Stat. 2057 (1994); Patent & Trademark Authorization Act of 1993, Pub. L. No. 103-179, 107 Stat. 2040 (1993); Patent and Plant Variety Protection Remedy Clarification Act, Pub. L. No. 102-560, 106 Stat. 4230 (1992); Patent & Trademark Authorization Act of 1991, Pub. L. No. 102-204, 105 Stat. 1636 (1991); Act to Authorize Appropriations for the PTO, Pub. L. No. 100-703, 102 Stat. 4674 (1988); Generic Animal Drug and Patent Term Restoration Act, Pub. L. No. 100-670, 102 Stat. 3971 (1988); Process Patents Amendment Act of 1988, Pub. L. No. 100-418 § 9001 *et seq.*, 102 Stat. 1107 (1988); Act to Amend the Patent Laws Implementing the Patent Cooperation Treaty, Pub. L. No. 99-616, 100 Stat. 3485 (1986); Federal Technology Transfer Act of 1986, Pub. L. No. 99-502, 100 Stat. 1785 (1986).

that specifically addressed the issue of patents for biotechnological inventions,[18] Congress has had ample opportunities to put a stop to the granting of utility patents to plants if it were in any way concerned about a conflict between utility patents and rights granted under the PPA and PVPA. Congress has never done so. To the contrary, the legislative history of a number of these amendments since *Hibberd* demonstrates Congress's affirmative understanding

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[18] For example, the Biotechnological Process Patents Act amended 35 U.S.C. § 103 to provide an option for an applicant to establish the non-obviousness of a use of a biotechnological product that was itself novel and non-obvious. *See* Pub. L. No. 104-41 § 1, 109 Stat. at 351. Section 4805 of the American Inventors Protection Act of 1999 directed the PTO to produce a study on the potential risks to the U.S. biotechnology industry arising from the practice of depositing biological materials in support of biotechnology patent applications. *See* Pub. L. No. 106-113 § 4805, 113 Stat. at 1501A-590.

and approval of the view that plant inventions are patentable subject matter under § 101.

For example, in 1990 Congress considered the Patent Competitiveness and Technological Innovation Act. The House Report on that bill included an extensive discussion of intellectual property rights in plants, including a summary of the PTO's decision in *Hibberd*, as well as *Ex parte Allen*, 2 U.S.P.Q. 2d 1425 (Bd. Pat. App. & Interf. 1987) (holding that § 101's scope extends to modified multicellular animals). *See* H.R. Rep. No. 960(I), 101st Cong., 2d Sess. (1990). The Report specifically noted the announcement of the Commissioner of Patents and Trademarks that the "PTO would examine applications on inventions relating to plant life." *Id.*(citing 1060 Off. Gaz. Pat. & Trademark Off. 4 (1985)). Clearly, the House was well aware that utility patents were being issued for plant-related inventions.

Likewise, the House Report on the Plant Variety Protection Act Amendments of 1994 specifically clarifies Congress's understanding that new plant varieties reproduced by seed are covered by multiple forms of protection:

> In the United States, *one* effective form of protecting new plant varieties that are reproduced by seed is by means of the Plant Variety Protection Act.

H.R. Rep. No. 699, 103rd Cong., 2d Sess. (1994), *reprinted in* 1994 U.S.C.C.A.N. 2423 (emphasis added). When introducing this legislation in the Senate, sponsor Senator Kerrey expanded on this point:

> Mr. President, Federal protection of intellectual property rights that arise from plant breeding is available in the United States *in three forms*: Plant patents, plant variety protection, and utility patents. . . . In recent years, so-called utility patents have been granted on living materials under the Patent and Trademark Act. Both asexually and sexually-reproduced plants which have been developed by traditional breeding, genetic engineering, tissue culture, and various other methods have received utility patents.

139 Cong. Rec. S10868 (Aug. 6, 1993) (emphasis added). *See also* Statement of Senator Kerrey on S. 1406, The Plant Variety Protection Act Amendments of 1993, Federal Document Clearing House Congressional Testimony (Sept. 20, 1993) ("Currently, federal protection of intellectual property rights that arise from plant breeding is available in the United States in three forms: plant patents, plant variety protection, and utility patents.").

In giving its "advice and consent" in 1998 to the 1991 Act of the International Convention for the Protection of New Varieties of Plants ("UPOV"), the Senate again confirmed this understanding. *See* 144 Cong. Rec. S7519-01 (July 6, 1998). Earlier Acts of the UPOV Convention generally prohibited signatories from providing "dual protection" (*i.e.* both patents and plant variety protections) for plant inventions. The United States advocated the removal of that prohibition from what became the 1991 Act, so that it would be clear that developers of plant technology in the United States could continue to obtain multiple forms of intellectual property protection—including utility patents. The transmittal letter for the 1991 Act from the President to the Senate includes an analysis of the obligations of the contracting parties that makes the following point:

> Article 2 simply states that each Contracting Party "shall grant and protect breeders' rights." In that respect, the 1991 Act is silent on the form of breeders' rights to be provided and *no longer contains the provisions of Article 2 of the 1978 Act prohibiting a member State from providing*

> *protection by way of patents* . . . for the same botanical genus or species.

Message from the President of the United States Transmitting the International Convention for the Protection of New Varieties of Plants of December 2, 1961, as Revised, Treaty Doc. 104-17, 104th Cong., 1st Sess. (May 10, 1995) (emphasis added). This analysis confirmed for Congress that the Convention was now consistent with the current practice in the United States of granting both utility patents and plant variety protection to sexually reproduced plants.

In addition, PTO representatives have been clear about the interaction of these plant-related regimes in their testimony before Congress. As early as 1987, the Assistant Commissioner for Patents confirmed that "[a]t the present time, parties [looking to protect plant innovations] have a choice of coming in under the general patent laws now, or going in under the Plant Variety Protection Act to cover their subject matter, and they can assess their relative merits for their type of situation under those systems." *Patents and the Constitution: Transgenic Animals, Hearings before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the House Committee on the Judiciary*, 100th Cong. 29 (June 11, 1987) (testimony of Rene Tegtmeyer).

Thus, Congress has clearly and repeatedly been advised, and has stated its understanding, that there are multiple forms of intellectual property for plants in the U.S. statutory scheme. Congress has had ample opportunities to modify this scheme, including through a number of acts specifically addressing biotechnology inventions. It has never elected to take any steps in that direction. Indeed, in those instances when Congress has addressed the co-existence of multiple systems of protection for plants, it not only has not expressed any concern, but has actually

acknowledged and endorsed the co-existing regimes. Given this context, the Court should continue, as it did in *Chakrabarty*, to read 35 U.S.C. § 101 exactly as broadly as it is stated and with the same understanding as to its breadth—in other words, to extend patent eligibility to "any" new, useful, and non-obvious manufacture, including one embodied in a plant.

CONCLUSION

For the foregoing reasons, *amicus curiae* the Biotechnology Industry Organization respectfully asks this Court to affirm the judgment of the Court of Appeals that seeds and seed-grown plants are patentable subject matter under 35 U.S.C. § 101 *et seq.*

Respectfully submitted,

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IN THE

Supreme Court of the United States

J.E.M. AG SUPPLY, INC.
(doing business as Farm Advantage, Inc.),
FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT
(doing business as Siouxland Seeds, Inc.),
KEVIN WOLFSWUNKEL, TIM KAMSTRA,
and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

—v.—

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR BASF CORPORATION AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

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QUESTION PRESENTED

Whether sexually reproduced plant varieties are within the statutory categories of subject matter enumerated in 35 U.S.C. § 101 (1994) for which utility patents may be granted?

PARTIES TO THE PROCEEDING BELOW

BASF Corporation was not a party to the proceeding below. Letters from all parties consenting to the filing of this brief have been filed with the Clerk.

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ABBREVIATIONS APPEARING IN THIS BRIEF

AIPA	American Inventor's Protection Act of 1999, Pub. L. No. 106-113, §§ 4001-4808, 113 Stat. 1501 (Nov. 29, 1999)
FDA	Food and Drug Administration
FDCA	Food, Drug and Cosmetic Act, 21 U.S.C. § 301 *et seq.* (1994)
PTO	Patent and Trademark Office

STATEMENT OF INTEREST OF AMICUS CURIAE[1]

Amicus BASF Corporation ("BASF") is a leader in the field of agricultural products, such as fungicides, herbicides, insecticides and plant growth regulators, for use on all major agronomic crops. Additionally, BASF has undertaken an extensive research and development program to improve plant traits by both traditional breeding methods and recombinant DNA technologies. BASF operates many research and manufacturing facilities throughout the United States, Canada and Mexico and manufactures a broad spectrum of products for the agricultural market. BASF is a corporation organized and existing under the laws of the state of Delaware, having its headquarters in Mount Olive, New Jersey.

Utility patent protection for plants and plant varieties is vital to BASF's agricultural businesses, and to seed producers and farmers, whose business depends upon novel and improved agricultural products, including plants. From BASF's perspective, the protection available under the Plant Variety Protection Act is inadequate to promote the development of plant inventions because that protection is limited to the single variety described. It is also inadequate because protection is only available at the very end of a long research and development effort when a variety is produced, long after many of the basic and often pioneering plant inventions have been made. Utility patent protection, on the other hand, provides broad generic protection for basic plant inventions and is available early in the research phase, long prior to the final

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[1] No person or entity other than *amicus curiae*, or its counsel, made a monetary contribution to the preparation of this brief.

incorporation of those basic inventions into a specific plant variety. These advantages of utility patent protection effectively promote the development of new plants, plant varieties and other plant-related inventions to the ultimate benefit of seed producers, farmers and all who participate in agriculture. The advantages inherent in utility patent protection are simply not attainable using the limited varietal protection available under the Plant Patent Act and Plant Variety Protection Act.

SUMMARY OF ARGUMENT

Congress recently expressed its intent that plants and plant varieties be within the statutory categories of subject matter of 35 U.S.C. § 101 (1994) in the American Inventor's Protection Act of 1999, Pub. L. No. 106-113, §§ 4001-4808, 113 Stat. 1501 (Nov. 29, 1999), by providing that utility patents claiming plants or plant varieties are entitled to priority under 35 U.S.C. § 119(f) (Supp. V 2000) based upon foreign applications for plant breeder's rights. Since foreign applications for plant breeder's rights are solely directed to plant varieties, § 119(f) unambiguously ratifies that utility patents may be granted for plants and plant varieties. This statute was enacted long after the Plant Patent Act of 1930 and the Plant Variety Protection Act of 1970, and fourteen years after the Patent and Trademark Office announced its policy that it would grant patents on plants and plant varieties under § 101. Congress therefore specifically legislated an answer to any question that may have been previously raised by the two plant-specific acts regarding patentability of plants and plant varieties under § 101.

Petitioners' reliance on *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000), is misplaced because there is no direct, irreconcilable conflict between the Plant Variety Protection Act and Title 35. Neither the "research exemption" nor the "crop saving exemption" of the Plant Variety Protection Act grants an affirmative right, so neither conflicts with the exclusive rights granted by a utility patent under Title 35. If the plant-specific acts were construed to exclude plants and plant varieties from protection by utility patent, they would contradict Congress' explicit intent expressed in § 119(f) that plants and plant varieties are protectable by utility patent. Congress could not have intended plants and plant varieties to be protectable by utility patent yet

at the same time intended the Plant Variety Protection Act and the Plant Patent Act to be the exclusive form of protection for plants. Given that direct conflict, the only reasonable conclusion is that Congress intended to provide protection to sexually reproduced plant varieties under both the Plant Variety Protection Act and §101.

ARGUMENT

Congress has exercised the power delegated to it in the Constitution, U.S. Const. art. I, § 8, cl. 8, to enact legislation to promote the progress of Science and the Useful Arts in a number of ways that are applicable to plants. The resulting statutory framework created a Patent and Trademark Office ("PTO") within the Department of Commerce to administer a patent system for inventions included within the scope of broadly defined subject matter listed in 35 U.S.C. § 101 (1994). 35 U.S.C. §§ 1-376 (1994). In this statute Congress specifically provided that *asexually* reproduced plants be protectable by plant patents issued by the PTO in consultation with the Department of Agriculture. 35 U.S.C. §§ 161-164 (1994). Finally, Congress also provided for establishment of a Plant Variety Protection Office within the Department of Agriculture to administer a system for protecting *sexually* reproduced plant varieties. 7 U.S.C. §§ 2321-2583 (1994).

Sixteen years ago, the PTO concluded, upon review of these statutes, that sexually reproduced plants and plant varieties were within the categories of invention for which utility patents may be granted under § 101, despite the existence of the additional scheme for protecting sexually reproduced plant varieties administered by the Department of Agriculture. 21060 Off. Gaz. Pat. Office 4 (1985) (citing *Ex parte Hibberd*, 227 USPQ 443 (Bd. Pat. App. & Interf. 1985)). Congress deferred to this PTO policy in not passing legislation to change it. Moreover, in a recent amendment to the patent laws, the American Inventor's Protection Act of 1999, Pub. L. No. 106-113, §§ 4001-4808, 113 Stat. 1501 (Nov. 29, 1999) ("AIPA"), Congress unambiguously ratified the PTO's conclusion that sexually reproduced plants and plant varieties are protectable by utility patent in a specific legislative provision, 35 U.S.C. § 119(f), under which utility patents under

§ 101 may claim priority to a foreign application for plant breeder's rights, which is the foreign equivalent to a United States plant variety protection certificate under 7 U.S.C. §§ 2321-2583. This provision of the AIPA has meaning only if Congress intended in 1999 that plants and plant varieties were protectable by utility patents under § 101. Thus, § 119(f) specifically addresses protection for plants and plant varieties by utility patent, confirms that such protection is available and constitutes the last word of Congress on that issue.

I. Long After The Plant-Specific Acts, Congress Enacted § 119(f), Which Clearly Reflects Its Agreement That Plants And Plant Varieties Are Within The Statutory Classes Of § 101

Upon enacting the Plant Variety Protection Act, Congress stated its belief that protection was not then available for sexually reproduced plants and plant varieties under the patent laws, noting that "[u]nder patent law, protection is *presently* limited to those varieties of plants which reproduce asexually . . . ." H.R. Rep. No. 91-1605, at 5083 (1970) (emphasis added). This does not mean that Congress considered sexually reproduced plants to be forever outside the statutory categories of § 101, but only that Congress observed that utility patent protection had not yet been granted for sexually reproduced plants. By 1970, Congress considered plants to be *sexually* reproducible "true-to-type"[2] and the result

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[2] The Plant Variety Protection Act requires that a protected variety be "stable, in the sense that the variety, when reproduced, will remain unchanged with respect to the essential and distinctive characteristics of the variety with a reasonable (continued...)

of human intervention and therefore no longer regarded them as products of nature. The Plant Variety Protection Act reflected that conclusion, which necessarily opened the way for inclusion of sexually reproduced plants within the statutory categories of § 101.

In 1999, long after enactment of the plant-specific acts, Congress amended Title 35 to grant the right for utility patent applications to claim priority to a foreign application for plant breeder's rights.[3] 35 U.S.C. § 119(f). Since such foreign breeder's rights are solely directed to plant varieties, Congress' grant of the right to claim priority to them is an explicit determination that plants and plant varieties are protectable by utility patent under § 101.

Until 1999, § 119 provided only for priority claims to foreign applications for patents and inventors' certificates. § 119(a), (d) (respectively). Section 119(a) requires that the foreign application to which priority is claimed (in this

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[2] (...continued)
degree of reliability commensurate with that of varieties of the same category in which the same breeding method is employed." 7 U.S.C. § 2402(a)(4) (1994).

[3] Foreign plant breeder's rights are intellectual property rights provided to breeders of plant varieties pursuant to the laws of a foreign country. Many countries have enacted laws consistent with the scheme for protecting plant varieties set forth in the International Convention for the Protection of New Varieties of Plants, Oct. 25, 1991, S. Treaty Doc. No. 104-17 (entered into force on Feb. 22, 1999). As of February 16, 2001, 47 countries have joined the Convention ("UPOV"), including the United States as of February 22, 1999.

instance, the foreign application for breeder's rights) describe the "same invention" as claimed in the later-filed United States application. The AIPA expanded the scope of this right to claim priority to include the right of utility patents to claim priority to foreign applications for plant breeder's rights by adding subsection (f):

> (f) Applications for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications for patents, subject to the same conditions and requirements of this section as apply to applications for patents.

35 U.S.C. § 119(f). Thus, in the context of a priority claim under § 119(f) to a foreign application for plant breeder's rights, the foreign application must describe the "same invention" claimed in the utility patent.

Congress amended § 119 to allow a utility patent application to claim priority to a foreign application for breeder's rights, which by definition discloses only a plant variety. Therefore, Congress directly expressed its conclusion that plants and plant varieties may be the subject of utility patents granted under § 101.

There is clear indication that Congress considered that a right of priority to foreign breeder's rights was necessary *because* plants and plant varieties were protectable by utility patent under § 101. In 1990, Congress acknowledged that the PTO Board of Patent Appeals and Interferences had concluded that the plant-specific acts were not the exclusive form of protection for plants and plant varieties, *Ex parte Hibberd*, 227 USPQ 443 (Bd. Pat. App. & Interf. 1985). Congress also

recognized that the Commissioner of Patents and Trademarks had announced, shortly after *Hibberd*, that the PTO would examine utility patent applications claiming plants and plant varieties:

> Rendered in 1985, *Ex Parte Hibberd*, was the next important decision [after *Diamond v. Chakrabarty*, 447 U.S. 303 (1980)] to consider the question of statutory construction of the Patent Act as it related to the patenting of a living subject matter. . . . Although the PTO examiner [in *Hibberd*] acknowledged that the invention met the criteria for patentability, the PTO took the position that the general patent law did not protect these specific plant materials because the subject matter could have been protected under one of the laws specifically relating to plants. In rejecting this contention, the Board of Patent Appeals relied on the Supreme Court analysis in *Diamond v. Chakrabarty*, concluding that congress did not intend the plant specific acts to be the exclusive forms of protection for plant life. Following this decision, the Commissioner of Patents and Trademarks announced that, in the future, the PTO would examine applications on inventions relating to plant life. 21060 Off. Gaz. Pat. Off. 4 (1985).

H.R. Rep. No. 101-960, at 20 (1990).

After this acknowledgment that plants and plant varieties had been found protectable under § 101, Congress made no attempt to amend that section to *exclude* plants or plant varieties. This congressional silence in deference to the PTO's interpretation of the scope of the statute it administers

demonstrates that the PTO's interpretation is consistent with the purpose of the act. *United States v. Rutherford*, 442 U.S. 544, 554 (1979) (Deferring to agency's interpretation of a statute it is charged with administering is "particularly appropriate where, as here, an agency's interpretation involves issues of considerable public controversy, and Congress has not acted to correct any misperception of its statutory objectives."); *Red Lion Broadcasting Co. v. FCC*, 395 U.S. 367 (1969) (Deferring to agency's construction is "especially" appropriate when "the Congress has not just kept its silence by refusing to overturn the administrative construction, but has ratified it with positive legislation.").

In fact, Congress began in 1996 to consider the amendment now reflected in § 119(f). There were nine legislative bills and four Senate or House Reports that demonstrate Congressional consideration of the same amendment now enacted as § 119(f). S. 1961, 104th Cong. § 602 (1996); H.R. 3460, 104th Cong. § 602 (1996); H.R. Rep. No. 104-784, at 82 (1996); S. 507, 105th Cong. § 602 (1997); S. Rep. No. 105-42, at 112 (1997); H.R. 400, 105th Cong. § 602 (1997); H.R. Rep. No. 105-39, at 81-82 (1997); H.R. 2654, 106th Cong. § 602 (1999); S. 1798, 106th Cong. § 702 (1999); H.R. 1907, 106th Cong. § 702 (1999); H.R. Rep. No. 106-287, at 68-69 (1999); S. 1948, 106th Cong. § 4802 (1999); H.R. 3194, 106th Cong. § 4802 (1999). Each of the noted four Reports acknowledges "utility protection for a plant variety" substantially as follows:

> Subsection (f) has been added to section 119 to provide for the right of priority in the United States on the basis of an application for a plant breeder's right first filed in a WTO member country or in a UPOV Contracting Party. Many foreign countries provide only a sui generis system of protection for plant varieties. Because section 119 presently addresses only patents and inventors' certificates, applicants from those countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or *utility protection for a plant variety* in this country.

H.R. Rep. No. 104-784, at 82 (1996) (emphasis added).

Thus, on no less than four occasions Congress recognized that § 101 provided for protection of plants and plant varieties and considered adding § 119(f) to allow for a claim of foreign priority analogous to those provided in § 119(a) and (d). This congressional activity, all of which occurred after the enactment of the plant-specific acts, unambiguously reflects an affirmative acknowledgment that plants and plant varieties are protectable by utility patent under § 101.

Petitioner attempts to minimize the importance of § 119(f) by characterizing the bill enacting it as an "amendment tacked on the end of a lengthy, multi-subject revenue bill, and inserted among 'miscellaneous patent provisions.'" (Petitioners' Br. 26.) Despite Petitioners' characterization, § 119(f) reflects Congress' considered judgment that plants and plant varieties are protectable under § 101.

While the amendment is part of a larger bill, Congress recognized the importance of the amendment to § 119. When S. 1798, an earlier version of the AIPA, was introduced to the Senate, Senator Orrin Hatch, then Chairman of the Senate Committee on the Judiciary, commented on the "Miscellaneous Patent Provisions" section containing the amendment to § 119: "Finally, the bill will make a number of miscellaneous, yet

important patent reforms."[4] 145 Cong. Rec. 13,259 (1999). This addition of § 119(f) was part of a substantial amendment to the Patent Act. In fact, the AIPA contains eight subtitles[5] spanning 100 pages and makes substantive changes to numerous aspects of the patent laws. Simply because the AIPA was part of a still larger enactment relating to appropriations[6] does not mean, as Petitioners would have it, that Congress did not focus on the issues of whether plants and plant varieties were included in the statutory categories recited in § 101.

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[4] The substantive amendments in the "Miscellaneous Patent Provisions" concern provisional patent applications, international applications under the Patent Cooperation Treaty, limitations on damages for infringement of surgical and medical method claims, PTO maintenance and publication of documents in an electronic medium, prior invention (35 U.S.C. § 102(g) (1994)) in interferences and as prior art, and prior art created under 35 U.S.C. § 102(e) (1994) (for purposes of 35 U.S.C. § 103 (1994).

[5] The subtitles are as follows: Subtitle A: "Inventors' Rights Act of 1999;" Subtitle B: "Patent and Trademark Fee Fairness Act of 1999;" Subtitle C: "First Inventor Defense Act of 1999;" Subtitle D: Patent Term Guarantee Act of 1999;" Subtitle E: "Domestic Publication of Foreign Filed Patent Applications Act of 1999;" Subtitle F: "Optional Inter Partes Reexamination Procedure Act of 1999;" and Subtitle H: "Miscellaneous Patent Provisions."

[6] The AIPA is Title IV of "The Intellectual Property and Communications Omnibus Reform Act of 1999," which is part of an Omnibus Appropriations Act.

In enacting § 119(f), Congress specifically addressed and ratified the determination of the PTO that utility patents may be granted for plants and plant varieties.

II. Utility Patent Protection For Plants And Plant Varieties Is Consistent With *FDA v. Brown & Williamson*

In *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000), this Court held that the Food, Drug and Cosmetic Act, 21 U.S.C. § 301 *et seq.* (1994) ("FDCA"), read in conjunction with Congress' subsequent tobacco-specific legislation, does not authorize the FDA to regulate tobacco products. Petitioners assert that the facts of *Brown & Williamson* are similar to the present facts and that § 101 read in conjunction with the plant-specific acts does not authorize the PTO to grant patents claiming plants or plant varieties.

In their analysis, however, Petitioners failed to acknowledge that, in *Brown & Williamson*, this Court was faced with a direct conflict that is lacking in the present case, and that this direct conflict was a critical factor in the outcome of the case. In *Brown & Williamson*, this Court found that the only regulatory action the FDA could take with respect to tobacco products was the banning of such products.[7] Any such ban of tobacco products, however, would be in direct conflict with later enacted law that, *inter alia*, regulated the labeling and advertisement of tobacco products, and adopted the express policy of protecting "commerce and the national economy . . .

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[7] This is because tobacco products, under the FDCA, would be considered unsafe, and the only action the FDA can take with respect to unsafe products is to remove them from the market.

to the maximum extent consistent with" consumers "being adequately informed about any adverse health effects." *Brown & Williamson,* 529 U.S. at 139 (citing 15 U.S.C. § 1331). These later enacted statutes indicated the clear intent of Congress to allow for the continued sale of tobacco products. "A ban of tobacco products by the FDA would therefore plainly contradict congressional policy." *Brown & Williamson,* 529 U.S. at 139. Consequently, this Court held that "the inescapable conclusion is that there is no room for tobacco products within the FDCA's regulatory scheme. If they cannot be used safely for any therapeutic purpose, and yet they cannot be banned, they simply do not fit." *Brown & Williamson*, 529 U.S. at 143.

In the present case, there is no such conflict. The Plant Variety Protection Act and the Plant Patent Act provide for the protection of sexually reproduced plant varieties and asexually produced plants, respectively. For the past sixteen years, utility patent protection has also been available for such plants, as well as for other types of plants not protectable under the Plant Variety Protection Act or the Plant Patent Act (*e.g.*, plants having genetically transmissible traits though not meeting the definition of "variety" in either statute).[8] Petitioners have been unable to point out one direct conflict between the Plant Variety Protection Act and § 101, such as the direct conflict encountered in *Brown & Williamson*. Petitioners provide a list of differences between the Plant Variety Protection Act and the utility patent provisions of Title 35. (Petitioners' Br. 22-24.) While Petitioners have characterized these differences as "conflicts," not one of these differences rises to the level of the

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[8] The Court of Appeals for the Federal Circuit has addressed the meaning of "variety" under both acts, *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560, 1567 (Fed. Cir. 1995).

direct, irreconcilable conflict seen in *Brown & Williamson*. The Plant Variety Protection Act and utility patent protection for plants and plant varieties under Title 35 can harmoniously co-exist, and have co-existed for over sixteen years.

For example, Petitioners attempt to make much of the "research exemption" and the "crop saving exemption" under the Plant Variety Protection Act.[9] However, there is no direct conflict presented by these exemptions. The exemptions merely exclude certain activities from infringement under the Plant Variety Protection Act; they do not create an affirmative right to carry out these activities without regard to any other law or regulation that may independently prohibit or regulate such activities.[10] Therefore, the exclusive rights granted by a utility patent on a plant variety in no way impacts the exemptions of the Plant Variety Protection Act. Because the protection of plants under Title 35 does not create a direct conflict with the Plant Variety Protection Act or the Plant Patent Act, *Brown & Williamson* does not apply to these statutes.

If, as Petitioners suggest, plant varieties were not within § 101, there *would* be a direct conflict between § 101 and

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[9] The "research exemption," 7 U.S.C. § 2544 (1994), excludes from infringement the use of an otherwise protected first plant variety for the development of a second plant variety, and the "crop saving exemption," 7 U.S.C. § 2543 (1994), excludes from infringement the saving of seeds from an otherwise protected plant variety for subsequent planting.

[10] The exclusive right allows one to prevent another from performing certain acts. The exemption defines activity exempt from the exclusive right, but does not grant a right to practice any act.

§ 119(f), and the reasoning of *Brown & Williamson* would lead to a holding that plants are patentable subject matter under § 101. The Petitioners seek to exclude the protection of plant varieties under the utility patent provisions of Title 35 based in part on the alleged comprehensiveness of the Plant Variety Protection Act, which, Petitioners suggest, proves that Congress intended the Plant Variety Protection Act to provide for the protection of plant varieties to the exclusion of protection under § 101. (Petitioners' Br. 34-35.)

This proposed exclusion would be in direct conflict with the subsequently expressed intent of Congress, as evidenced by § 119(f), which unambiguously shows (without requiring any recourse to legislative history) that Congress intended § 101 to include the protection of plants. *Blum v. Stenson*, 465 U.S. 866, 896 (1984) ("[W]e look first to the statutory language and then to the legislative history if the statutory language is unclear."). The clear and unambiguous intent of Congress is therefore that plants and plant varieties are protectable subject matter under § 101. If plants and plant varieties were not considered patentable subject matter under § 101, the legislation specifically granting a right of a utility patent application to claim priority to a document that deals exclusively with plant varieties would be meaningless. *United States v. Borden Co.*, 308 U.S. 188, 198 (1939) ("When there are two acts upon the same subject, the rule is to give effect to both if possible . . . ."). The later enactment of the plant-specific § 119(f) is conclusive evidence that Congress intended plants and plant varieties to be within the scope of § 101. Under the reasoning in *Brown & Williamson*, Congress could not have intended that plants are patentable subject matter under § 101 and, at the same time, intended the Plant Variety Protection Act to exclusively provide for the protection of sexually reproduced plants. The inescapable conclusion is that Congress intended that both § 101 and the Plant Variety Protection Act be applicable to plant varieties.

CONCLUSION

In the American Inventor's Protection Act of 1999 Congress expressed its legislative determination that plants and plant varieties are within the subject matter protectable by utility patent. This statute was enacted long after the Plant Patent Act and the Plant Variety Protection Act, and fourteen years after the Patent and Trademark Office's administrative determination that it was authorized to grant utility patents on plants and plant varieties. It addressed and resolved any question that may have been previously raised by the two plant-specific acts regarding patentability of plants and plant varieties under § 101. Congress ratified in § 119(f) the agency determination that sexually reproduced plant varieties are protectable under both the Plant Variety Protection Act and Title 35.

Respectfully submitted,

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In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (D/B/A FARM, ADVANTAGE, INC.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (D/B/A SIOUXLAND SEEDS, INC.), KEVIN WOLFSWINKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

BRIEF AMICUS CURIAE OF DELTA AND PINE LAND COMPANY IN SUPPORT OF RESPONDENT

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QUESTION PRESENTED

Are patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-64, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants or plant varieties?

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INTEREST OF AMICUS CURIAE*

Delta and Pine Land Company is a breeder, developer and marketer of cottonseed and soybeans, which are sold to farmers for planting throughout the United States and in many other countries where these crops are grown. Delta and Pine Land Company is the holder of a number of certificates of plant variety protection and the assignee of numerous patents in cotton and soybean cultivars. Delta and Pine Land Company is also co-assignee (with the United States Department of Agriculture) of U.S. Pat. No. 5,723,765, which covers a method for control of plant gene expression.

If utility patents claiming plant-related subject matter are invalidated, Delta and Pine Land Company, along with other participants in the ongoing biotechnology revolution, would incur substantial losses of investment in research and development and other resources. Its commercial and research relationships with collaborators in agricultural biotechnology ventures around the world would be seriously and adversely affected. More broadly, innovation in plant technology in the United States would be stymied and placed at a great disadvantage in comparison to Europe and other regions of the world where inventions embodied in plants may be patented.

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* No part of this brief was authored by counsel for any party to this case, and no person or entity other than Delta and Pine Land Company made a monetary contribution to the preparation or submission of this brief.

STATEMENT OF THE CASE

This case concerns whether a multitude of United States utility patents issued during the last sixteen years will be invalidated simply because the patented inventions relate to or are embodied in plant organisms. Petitioner contends that because certain intellectual property rights in asexually reproducing plants may be protected under the Plant Patent Act ("PPA"), and because novel varieties of sexually reproducing plants may be protected under the Plant Variety Protection Act of 1970 ("PVPA"), inventions pertaining to plants are unpatentable subject matter for purposes of utility patents under 35 U.S.C. § 101. Both the district court and the Federal Circuit held that there is no irreconcilable conflict among the three intellectual property regimes which would preclude the issuance of utility patents for inventions embodied in plants, so long as the plant invention meets the statutory criteria for patentability under 35 U.S.C. §§ 101-157. *Pioneer Hi-Bred International, Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374, 1376 (2000), *cert. granted*, ___ U.S. ___, 121 S.Ct. 1077 (2001). On February 20, 2001, this Court granted certiorari to review the Federal Circuit decision.

AUTHORITY TO FILE

Both parties have given permission for the filing of this amicus brief. Copies of the permission letters are attached to the proof of service submitted to the Clerk.

SUMMARY OF THE ARGUMENT[1]

1. Petitioners contend that sexually reproducing "plants are not patentable subject matter within the scope of 35 U.S.C. § 101," because intellectual property protection for such plants supposedly "is exclusively obtainable under the provisions of the Plant Variety Protection Act of 1970 (PVPA), 7 U.S.C. § 2313, *et seq.*" (Pet. Br. 6, 7.) However, the PVPA does not embrace all forms of innovation pertaining to sexually reproduced plants. Rather, it affords an extremely narrow scope of protection for novel "plant varieties," a legal grouping of plants based on measurements of phenotypic differences. Many inventions, which meet all the requirements of patentability under 35 U.S.C. § 101, *i.e.*, originality, novelty, nonobviousness, and utility, are embodied in plants not constituting "plant varieties" under the PVPA. Under Petitioners' theory, even though such inventions could not be protected under the PVPA, they could not be the subject of utility patents either. This erroneous position would deprive a broad class of inventions of any intellectual property protection, and would constitute a major disincentive to innovation in biotechnology. This illogical outcome advocated by Petitioners has been rejected in foreign patent systems, even where there is an express legal prohibition against dual coverage of the same invention under patent and plant breeders' rights laws.

[1] To avoid duplication of arguments likely to be made by the Respondent, in this brief, Delta and Pine Land Company addresses a limited range of issues relevant to the Court's consideration of this case.

2. The economic and social effects of plant utility patents complained of by Petitioners and the *amici curiae* who support them do not support the invalidation of such patents. Economic analyses of the introduction of patented seed products to United States agriculture demonstrate that farmers have received the greatest economic benefits of all economic participants. Finally, utility patents for inventions embodied in plants do not adversely affect genetic diversity in the United States.

ARGUMENT

I. WITHDRAWAL OF UTILITY PATENT PROTECTION FOR PLANT SUBJECT MATTER WOULD LEAVE UNPROTECTIBLE A VAST FIELD OF PLANT INNOVATION THAT CANNOT BE COVERED BY THE PPA OR THE PVPA AND WOULD BE INCONSISTENT WITH CONGRESSIONAL INTELLUCTUAL PROPERTY POLICY

The suggestion that all plant subject matter is ineligible for utility patents, simply because the PVPA affords a form of protection to novel "varieties" of sexually reproduced plants, betrays a misunderstanding of the narrow concept of a plant "variety" embodied in the PVPA. The experience of patent protection in Europe demonstrates that even if Congress had forbidden simultaneous protection of plant varieties by both plant variety protection certificates and utility patents, there would remain a vast range of plant-related innovation which could only be protected by utility patents.

As Delta and Pine Land Company noted in testimony submitted to Congress in 1970 in support of the original enactment of the PVPA, "[i]n designing this bill, the authors have thoroughly studied the systems of other countries." *Plant Variety Protection: Hearing Before the Subcomm. on Departmental Operations of the Committee on Agriculture of the House of Representatives*, 91st Cong. 59-60 (1970) (statement of Delta & Pine Land Co.). Indeed, the PVPA was enacted in light of the fact that, "[t]he governments of several European countries, in particular, West Germany, Holland, Austria, Denmark, England and France, ha[d] already seen the need for and ha[d] made available in their respective countries a form of plant variety protection to developers of sexually reproduced plants." *Plant Variety Protection Act: Hearing Before the Subcomm. on Agricultural Research and General Legislation of the Committee on Agriculture and Forestry of the Senate*, 91st Cong., 2d Sess., at 68 (1970) (statement of Richard W. McKenna, Senior Vice President, Ferry-Morse Seed Co.). Most of these European countries were signatories to the 1961 Act of the International Convention for the Protection of New Varieties of Plants (UPOV Convention), which established a system of plant variety protection, which the U.S. Department of Agriculture characterized as "similar" to the PVPA. *Id.* at 52.

The United States never acceded to the 1961 UPOV Convention, and in enacting the PVPA, "priority was given in certain respects to domestic pressures (rationality of the legislative order, needs and desires of the parties concerned, traditions, etc.), rather than to strict conformity with the UPOV Convention." *See* International Union for the Protection of New Varieties of Plants,

The History of Plant Variety Protection, in THE FIRST TWENTY-FIVE YEARS OF THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS 53, 91 (1987). One such non-conformity in the PVPA was that Congress did not enact any provision as a counterpart to Art. 2(1) of the UPOV Convention, which prohibited "double protection" of plant varieties:

> Each member State of the Union may recognize the right of the breeder provided for in this Convention by the grant either of a special title of protection or of a patent. Nevertheless, a member State of the Union whose national law admits of protection under both these forms may provide only one of them for one and the same botanical genus or species.

UPOV Convention, 33 U.S.T. 2703, 815 U.N.T.S. 89.

In an effort to obtain the accession of a greater number of states, the UPOV Convention was revised in 1978. The United States signed, but did not ratify, this version of the convention. Among other changes made in the 1978 UPOV Convention, "an exceptional rule allowing protection under two forms was introduced in Art. 37." Joseph Strauss, *AIPPI and the Protection of Inventions in Plants – Past Developments, Future Perspectives*, 20 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 600, 611 (1989).[2] "This

[2] Art. 37(1) of the 1978 UPOV Convention provided in pertinent part that "any State which, prior to the end of the period during which this Act is open for signature, provides for protection under the different forms referred to in for one and the same genus or species, may continue to do so." Unlike many other nations, the United States had provided patent protection to plants pursuant to the PPA since 1930. Moreover, "before the end of the open signature period referred to in Art. 37(1), on October 21, 1979, the PTO's practice of not granting utility patents on living matter had also been reversed by an intermediate appellate court." Reid G. Adler, *Can Patents Coexist with Breeders' Rights? Developments in U.S. and International Biotechnology Law*, 17 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 195, 212 (1986). "[B]ecause of the meaning of 'patent,' . . . the U.S. can thus fairly be said to have provided protection by patents as contemplated by the drafters of UPOV." *Id.* For this reason, commentators have concluded, "the issuance of a plant utility patent d[id] not violate Art. 2(1). *Id.*

rule eventually led to a situation in which the United States of America is able to grant for plant varieties, plant patents and plant variety certificates, as well as utility patents." *Id.*

Although the United States never signed the 1961 UPOV Convention, a number of European countries did sign or accede to it.[3] Taking account of this different situation in Europe, in Article 2(b) of the 1963 Strasbourg Convention on the Unification of Certain Points of Substantive Law on Patents for Invention, the member states of the Council of Europe left the issue of "dual protection" up to the individual states, by agreeing that "[t]he Contracting States shall not be bound to provide for the grant of patents in respect of . . . plant or animal varieties. . . . "[4] Ten years later, however, the parties to the

[3] A list of UPOV member states, together with the dates of their accession to the UPOV Convention, is available at <http://www.upov.int/eng/ratif/pdf/ratifmem.pdf>.

[4] Convention on the Unification of Certain Points of Substantive Law on Patents for Invention, opened for signature Nov. 27, 1963, 1249 U.N.T.S. 369. The English text of the Strasbourg Convention is also available at the Council of Europe web site, <http://book.coe.fr/conv/en/ets/47-en.htm>.

European Patent Convention (EPC) eliminated the option of "dual protection" in member states by adopting Article 53(b), which provides, in pertinent part, that "European patents shall not be granted in respect of . . . plant or animal varieties. . . . "[5]

When the UPOV Convention was revised again in 1991, at the initiative of the vast majority of participants in the diplomatic conference, Art. 2(1) and its prohibition on dual coverage were removed.[6] However, Art. 53(b) of the EPC has not been revised to reflect the elimination of

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[5] This instrument, known as the European Patent Convention, was signed into existence in Munich as the Convention on the Grant of European Patents, Oct. 5, 1973, 1065 U.N.T.S. 255, 13 I.L.M. 270.

[6] *See* UPOV, RECORDS OF THE DIPLOMATIC CONFERENCE FOR THE REVISION OF THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (1991) at 212-218. The Danish UPOV delegation to the revision conference, which proposed retaining a modified ban on dual protection, conceded that, the "position in favor of an exclusive protection system for plant varieties did not exclude . . . – and had never excluded, not even under the present Convention – the possibility of another form of protection applying to a plant variety, for example, as the result of the presence of a patented gene. The authorities had never seen any obstacle to a combination of the two forms of protection." *Id.* Despite this concession, the Danish delegation suggested that a ban on dual protection should be the norm of the convention, but that member states should be allowed to derogate from it if they so wished. *Id.* The great majority of delegations, however, including the United States delegation (*id.* at 215), opposed the Danish position. *Id.* at 213-18. Accordingly, former Art. 2(1), with its prohibition of "dual protection" for plant varieties, was removed from the convention, leaving the text of the 1991 UPOV Convention silent on the matter.

the ban on dual protection from the 1991 UPOV Convention. Consequently, the applicable legislation in EPC member states provides expressly what Petitioners contend the United States Congress intended but failed to mention in the PVPA. Even in Europe, however, where plant varieties are prohibited to be patented, the result advocated here by Petitioners has been rejected.

Whether the European Patent Office could issue utility patents as to inventions embodied in sexually reproducing plants was a topic of discussion and administrative litigation in the 1980s, which continued into the late 1990s. Much of the discussion focused on the narrow, legal concept of a "plant variety" under Art. 53(b) of the EPC.[7] As in the United States, European plant variety protection legislation is based on the concept of a "plant variety" found in the UPOV Convention.[8]

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[7] *See, e.g.*, Rainer Moufang, *Protection for Plant Breeding and Plant Varieties – A Frontier of Patent Law*, 23 INT'L REV. OF INDUS. PROP. & COPYRIGHT L. 328, 335-343 (1992) (arguing in favor of patentability of plant inventions); Andrew Christie, *Patents for Plant Innovation*, 11 EUR. INTELL. PROP. REV. 394, 407 (1989) ("As a matter of general principle, patent protection is available for a wide range of plant innovation").

[8] *See, e.g.*, Art. 5(2) European Council Regulation (EC) No. 2100/94 of 27 July 1994 on European Community Plant Variety Rights, available at <http://www.cpvo.fr/en/Lex/EN394R2100.pdf> ("For the purpose of this Regulation, 'variety' shall be taken to mean a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a plant variety right are fully met, can be: [1] defined by the expression of the characteristics that results from a given genotype or combination of genotypes, [2] distinguished from any other plant grouping by the expression of at least one of the said

Therefore, what constitutes a protectible plant "variety" is determined with reference to sets of phenotypic criteria, which were established, not by universally valid scientific principles, but by legal standards aimed at uniform application throughout UPOV Convention member states:

> Before the development of the UPOV system, many countries had their own regulations regarding the examination of varieties. The technical criteria for the grant of rights differed from one country to another and even the variety concept was not seen in the same light in all countries. The technical standards and testing procedures depended largely on the expertise of the official concerned. This lack of harmonization caused problems, especially when a breeder sought protection for his variety in several countries. A variety which had been considered distinct, uniform and stable in one country might be rejected in another or vice versa. It was realized that harmonization was urgently required and this responsibility was taken on by UPOV, as a result of the adoption of the [UPOV Convention] in 1961.[9]

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characteristics, and [3] considered as a unit with regard to its suitability for being propagated unchanged"). The same concept is codified in the PVPA at 7 U.S.C. § 2401(a)(9) and in the regulations of the United States Plant Variety Protection Office. *See, e.g.*, 7 C.F.R. § 97.1 ("Certificates of protection are issued by the Plant Variety Protection Office for new, distinct, uniform, and stable varieties of sexually reproduced or tuber propagated plants").

[9] *See* UPOV, *Introduction*, <http://www.upov.int/tg-rom/introd-e.htm> (accessed June 4, 2001).

In 1983, the EPO's Technical Board of Appeal considered claims to plant "propagating material," which had been chemically treated to confer herbicide resistance. *No. T49/83 CIBA GEIGY/Propagating Material*, 1984 O.J. Eur. Pat. Off. 112 (1983). The Technical Board concluded that the claimed invention "does not lie within the sphere of plant breeding, which is concerned with the genetic modification of plants." For this reason, the Technical Board said, chemically treating seeds did not create "plant varieties" within the meaning of Art. 53(b) of the EPC.

In *No. T320/87 Hybrid Plants/Lubrizol*, 1990 O.J. Eur. Pat. Off. 71 (1988), the Technical Board held that a novel combination of traditional plant breeding techniques produced plants and seeds not constituting a "plant variety," and thus the techniques were eligible for process patent protection. Moreover, the Technical Board allowed "product-by-process" claims to the hybrid plants and seeds resulting from the techniques. Due to the heterozygous genetics of the hybrids plants, they would not "breed true," and thus lacked the genetic "stability" to be classified as a "variety."

In *T356/94 – Plant Genetic Systems/Glutamine Synthetase Inhibitors*, 1995 Eur. Pat. Off. Rep. 357 (1995), however, the Technical Board construed Art. 53(b) to forbid patent claims that include plant varieties within their broad scope. In response to this decision, "the EPO was obliged to suspend its previous practice of granting claims to genetically modified plants." Tim Roberts, *EPO: Patents – Patentability of Plants*, 22 Eur. Intell. Prop. Rev. N49 (2000). The Swiss biotechnology company Novartis mounted a challenge to the policy announced in *Plant*

Genetic Systems, the outcome of which was a December 20, 1999 decision by the Enlarged Board of Appeals of the European Patent Office – the highest authority within the EPC system. *Id.*

In *No. G 1/98 – Transgenic Plant/Novartis II*, 3/2000 O.J. EUR. PAT. OFF. 111, 2000 EUR. PAT. OFF. REP. 303 (Dec. 20, 1999), the Enlarged Board agreed with Novartis and rejected the holding in *Plant Genetic Systems*. The Enlarged Board held that the extent of the EPC Art. 53(b) exclusion for patents was coextensive with the availability of plant variety rights under the UPOV Convention. Therefore, "inventions ineligible for protection under the plant breeders' rights system were intended to be patentable under the EPC provided they fulfilled the other requirements of patentability." The board noted that the UPOV Convention defines "variety," in part, as a plant grouping delineated by the expression of characteristics that result from a given genotype. Since a claim to a transgenic plant does not necessarily identify those characteristics required to assess the homogeneity and stability of varieties within a given species, the board reasoned, the claimed transgenic plant does not define a single variety.[10]

The Enlarged Board summarized its holding as follows:

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[10] The result in *Novartis* is consistent with the European Union's Directive 98/44/EC on the Legal Protection of Biotechnological Inventions, available at <http://europa.eu.int/eur-lex/en/lif/dat/1998/en___398L0044.html>, which came into force on July 30, 1998.

> **[A]ccording to Article 53(b) EPC, a patent is "in respect of varieties" and shall not be granted if the claimed subject-matter is directed to plant varieties. In the absence of the identification of a specific plant variety in a product claim, the subject-matter of the claimed invention is not directed to a plant variety or varieties within the meaning of Article 53(b) EPC. That is why it is . . . in agreement with the rules of logic that a patent shall not be granted for a single plant variety but can be granted if varieties may fall within the scope of its claims.**

The position advocated here by Petitioners would have the perverse result of rendering the scope of patentable subject matter in the United States, whose legislation does not forbid "dual protection" of plant varieties, much narrower than in Europe, where the applicable legislation does include such a ban. Economists have found that weakness in a country's intellectual property laws leads companies to invest in other countries, where intellectual property protection is stronger, and to limit or withhold the introduction of new technologies in nations where less protection is available. *See* Edwin Mansfield, *Intellectual Property Protection, Foreign Direct Investment and Technology Transfer*, IFC Discussion Paper No. 19 (1994), available at <http://www.ifc.org/economics/pubs/dp19/dp19.doc>. Thus, a predictable consequence of holding that utility patents cannot be granted as to plant subject matter would be the flight of businesses engaged in biotechnology research to jurisdictions where their inventions could be legally protected.

Placing United States inventors and consumers at such a competitive disadvantage vis-à-vis those in

Europe would contravene Congressional policy, which has consistently sought to ensure a "level playing field" with international competitors, and to ensure that the United States enjoys "the greatest relative competitive advantage in the global marketplace." *See, e.g.*, 145 Cong. Rec. H6929-02, 1999 WL 564424 (Aug. 3, 1999) ("The U.S. should promote industries and sectors of our economy that provide the U.S. with the greatest relative competitive advantage in the global marketplace. The U.S. is a leader in research, innovation, and the development of intellectual property, but this advantage could be jeopardized if U.S. patent law is not reformed to create a level playing field with our competitors. U.S. patent law should be reformed to ensure that our businesses and researchers are well positioned to compete in the global economy today and into the future"). To refuse utility patent protection to inventions relating to plants would represent a failure of the United States intellectual property system. And, as demonstrated below, it also would be entirely contrary to the plain language of the utility patent statute.

Because the United States' utility patent scheme contains no counterpart to Art. 53(b) of the EPC, this Court may eschew the European "semantic approach and its fruitless debate over the precise meaning and scope of the terms 'plant variety' and 'plant'." *See* Geertrui Van Overwalle, *Patent Protection for Plants: A Comparison of American and European Approaches*, 39 IDEA: J.L. & TECH. 143, 172, 192 (1999) (concluding "that patent law should provide patent protection for all plant inventions, regardless of whether they are obtained by conventional breeding methods or by modern transformation techniques"). As

the Federal Circuit noted, "the PVPA does not purport to remove plants from the patent statute. Neither Congress nor the Courts excluded new plant varieties from the patent statute; the enactment of the PVPA did not affect such an exclusion." *J.E.M. Ag Supply, Inc.*, 200 F.3d at 1378.

The United States Patent and Trademark Office ("USPTO") has issued utility patents covering plant subject matter since the Board of Patent Appeals and Interferences decided, in *Ex parte Hibberd*, 227 U.S.P.Q. 443 (Bd. Pat. App. & Interf. 1985), that plants are not excluded from patentable subject matter under 35 U.S.C. § 101. In the sixteen years since *Hibberd*, Congress has had multiple opportunities to "correct" this interpretation in the event Congress disagreed with it. That it has not done so is instructive for this Court in interpreting the general patent statute. *Cf. Johnson v. Transportation Agency*, 480 U.S. 616, 629 n. 7 (1987) ("Congress has not amended the statute to reject our construction, nor have any such amendments even been proposed, and we therefore may assume that our interpretation was correct"); *Nat. Labor Relations Bd. v. Bell Aerospace Co.*, 416 U.S. 267, 274-75 (1974) ("In addition to the importance of legislative history, a court may accord great weight to the longstanding interpretation placed on a statute by an agency charged with its administration. This is especially so where Congress has re-enacted the statute without pertinent change. In these circumstances, congressional failure to revise or repeal the agency's interpretation is persuasive evidence that the interpretation is the one intended by Congress"). Here, not only has Congress refrained from amending the statute to remove plants from coverage under 35 U.S.C.

§ 101, Congress has amended the statutory patent scheme to accommodate the USPTO's interpretation.

Subject to certain conditions, 35 U.S.C. § 119 affords to an inventor who has filed a patent application in a foreign country the right to file an application for a United States utility patent, and to have the United States application treated as if it had been filed when the foreign application was filed. In 1999, Congress rewrote § 119, *see* Pub. L. No. 106-113, 113 Stat. 1536, to comply with the requirements of the Trade Related Aspects of Intellectual Property Rights ("TRIPs") Agreement, which was part of the Uruguay Round Agreements of the General Agreement on Tariffs and Trade. *See* TRIPs Agreement, 33 I.L.M. 1197 (1994). The 1999 revision permits applicants who previously filed a patent application in a World Trade Organization ("WTO") country to claim priority in a subsequent patent application filed in the United States. Of greatest importance to this case is the new § 119(f), which provides that,

> Applications for plant breeder's rights filed in a WTO member country (or in a foreign UPOV Contracting Party) shall have the same effect for the purpose of the right of priority under subsections (a) through (c) of this section as applications of patents subject to the same conditions and requirements of this section as apply to applications for patents.

35 U.S.C. § 119(f).

In § 119(f), Congress plainly acknowledged the USPTO's practice of issuing utility patents on inventions relating to or embodied in plants. Congress also recognized that plant varieties subject to protection under the

UPOV Convention may also meet the conditions for issuance of a utility patent. Rather than amend 35 U.S.C. § 101 to remove sexually reproducing plants from patentable subject matter, Congress took the opposite approach; it amended the priority provisions of § 119 to ensure that plant variety protection applications in foreign countries would have the same priority treatment as foreign patent applications.[11]

By enacting subsequent legislation to accommodate the USPTO's conclusion that plants constitute patentable subject matter under 35 U.S.C. § 101, Congress "has effectively ratified the [USPTO's] position," *see FDA v. Brown & Williamson Tobacco Corp.* 529 U.S. 120, 156 (2000), since "it is hardly conceivable that Congress . . . was not abundantly aware of what was going on." *Id.* (quoting *Bob Jones Univ. v. United States*, 461 U.S. 574, 600-01 (1983)). Thus, to deny utility patent protection to plant subject matter would impose restrictions found nowhere in the text of the patent laws, and would thwart the clearly expressed will of Congress. Accordingly, this Court should affirm the Federal Circuit's decision and hold that inventions relating to or embodied in plants are

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[11] The legislative history makes it clear that "[s]ubsection (f) to section 119 of the Patent Act . . . provide[s] for the right of priority in the United States on the basis of an application for a plant breeder's right first filed in a WTO member country or in a UPOV Contracting Party. . . . Because section 119 presently addresses only patents and inventors' certificates, applicants from these countries are technically unable to base a priority claim on a foreign application for a plant breeder's right when seeking plant patent or utility patent protection for a plant variety in this country." 145 Cong. Rec. S14696-03 (Nov. 17, 1999).

eligible for utility patent protection if they otherwise meet the requirements for patentability.

II. THE ECONOMIC IMPACTS OF PLANT PRODUCTS CONTAINING PATENTED MATERIALS HAVE BEEN FAVORABLE FOR FARMERS

Amici curiae American Corn Growers Association ("ACGA") and National Farmers Union ("NFU") assert in their brief in support of Petitioners ("ACGA Br.") that utility patent protection for plant subject matter has harmed farmers and consumers by (1) depriving farmers of the "traditional right to save seed," (2) raising the prices of seed, and (3) resulting in companies' "prosecuting patent infringement and other intellectual property violations" by farmers. ACGA Br. at 25-29. None of these contentions, however, supports the suggestion that Congress intended plant subject matter to be ineligible for utility patent protection, and none of them provides a policy basis for refusing such protection to inventions embodied in plants.

The utility patent system does not afford a right, without the patent holder's authorization, to save and plant progeny seed containing patented material. However, farmers are not prohibited from saving seed protected only under the PVPA for the purpose of replanting their own fields. 7 U.S.C. § 2543.[12] A farmer to whom the

[12] Prior to its amendment in 1994, the PVPA did not prevent farmers from selling to others seed which they had saved for the purpose of planting their own crop. *Asgrow Seed Co. v. Winterboer*, 513 U.S. 179, 192 (1995). Consistent with the 1991 UPOV Convention, however, the PVPA was amended to delete the exemption permitting farmer sales of seed as to plant variety protection certificates issued after April 4, 1995, that were not pending on or before that date. *See* Pub. L. No. 103-349, §§ 14(a), 15, 108 Stat. 3144, 3145 (1994).

ability to save seed for replanting is more cost-beneficial than the improved characteristics of a seed product covered by a patent has the option of planting seeds not subject to patents. "An inventor deprives the public of nothing which it enjoyed before his discovery," *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 186 (1933), and patents on new inventions do not eliminate the availability of public domain varieties or PVPA-protected-only varieties.

If the superior qualities of seed products containing patented materials compared with non-patented products are not worth the increased cost of the new invention, the patented products will fail in the market. This is because "a patented innovation that finds little or no market demand is not consumed and thus generates no revenues for its owner." Erik A. Maurer, *An Economic Justification for a Broad Interpretation of Patentable Subject Matter*, 95 Nw. U. L. Rev. 1057, 1089 (2001). For these reasons, "undemanded patents and their owners suffer the market consequences of natural selection, while society still gains from their teachings and the wealth generation inherent in accumulating knowledge." *Id.* at 1091. Therefore, seed products covered by utility patents do not pose a threat of economic harm to farmers.

Moreover, far from determining that patented products cause economic harm to farmers, agricultural economists have concluded that when cotton containing patented insect-resistant *"Bt"* genes[13] was introduced in the United States in 1996, farmers received the 59% of the total economic benefits generated – by far the largest benefit distributed among economic participants, including the developers of the expressed gene and the cotton germplasm. *See* José Benjamin Falck-Zepeda, Greg Traxler & Robert G. Nelson, *Surplus Distribution from the Introduction of a Biotechnology Innovation*, 82 Am. J. Agric. Econ. 360, 367 (2000). In 1997, the same researchers concluded, farmers received 42% of the economic surplus from *Bt* cotton, and farmers' share of total economic benefits from the introduction of patented, herbicide-tolerant soybeans was 76%. *See* José B. Falck-Zepeda, Greg Traxler & Robert

[13] In the parlance of agricultural biotechnology, *"Bt"* plants are plants which have been genetically engineered to express traits from *Bacillus thuringiensis*, a common soil bacterium, which is toxic to certain insects of the Order Lepidoptera, such as the European corn borer, bollworms, tobacco budworms, and pink budworms. "Genes conferring resistance to insects have been inserted into crop plants such as maize, cotton, potato, tobacco, . . . rice, broccoli, lettuce, walnuts, apples, alfalfa and soybean." Hari C. Sharma, Kiran K. Sharma, Nadoor Seetharama & Rodomiro Ortiz, *Prospects for Using Transgenic Resistance to Insects in Crop Management*, 3 Molecular Biology & Genetics No. 2 (2000) (available on the internet at <http://ejb.org/content/vol3/issue2/full/3/index.html>). An informative discussion of the *Bacillus thuringiensis* gene and the genetic engineering techniques by which it has been introduced in plants can be found in *Mycogen Plant Science v. Monsanto Co.*, 243 F.3d 1316, 1322-24 (Fed. Cir. 2001).

G. Nelson, *Rent Creation and Distribution from Biotechnology Innovations: The Case of Bt Cotton and Herbicide-Tolerant Soybeans in 1997*, 16 Agribusiness 21, 30-31 (2000). A further analysis of the first three years showed consistent results: "Farmers share the rents created by the technology almost equally with innovators, even when a monopolistic structure for the input market is assumed." *See* José B. Falck-Zepeda, Greg Traxler & Robert G. Nelson, *Rent Creation and Distribution from the First Three Years of Planting Bt Cotton* (ISAAA Briefs No. 14 1999), available at <http://www.isaaa.org/publications/briefs/Brief___14.htm>. Thus, although seed costs may have risen, the overall economic benefits to farmers from introduction of these patented seed products far exceed the increased seed costs.

ACGA/NFU also contend that farmers should not be subject to liability when they breach their license agreements and infringe utility patents by "saving seed or selling or trading seed to fellow farmers." ACGA Br. at 28. However, quite apart from utility patent law, farmers are prohibited to sell, without authorization by the variety owner, seed of varieties protected under the 1994 amendments to the PVPA. *See* 7 U.S.C § 2541(a)(1) (prohibiting unauthorized sales of protected variety).

Likewise, contractual restrictions on the use of technical materials, such as bag label contracts and materials transfer agreements (MTAs), may be enforceable even absent a statutorily created intellectual property right.[14]

[14] *See, e.g.*, Eran Brinenbaum, Carol Nottenburg, Philip G. Pardey, Brian D. Wright & Patricia Zambrano, South-North

The existence of litigation between seed companies and farming entities is due, in many cases, to the fact that some farmers have deliberately infringed seed companies' rights, sometimes on a very large, commercial scale. *See, e.g., Delta and Pine Land Company v. Sinkers Corp.*, 177 F.3d 1343, 1352 & n. 7 (Fed. Cir. 1999) (farming partnership, without authorization, sold enough PVPA-protected cottonseed "to plant close to 25,000 acres or forty square miles of cotton"). ACGA/NFU's contention is less an argument against utility patents than it is an argument against all intellectual property laws or even consensual restrictions of any kind. It is not a reason to invalidate utility patents in preference to plant variety rights or other forms of protection.

Farmers in the United States are reaping the benefits of the increased investments in agricultural biotechnology, which have been encouraged and made economically feasible because of the availability of utility patent protection. To destroy this incentive to invest in research, by invalidating plant utility patents, would deal a senseless, destructive blow to the economic interests of farmers and consumers of farm products. Accordingly, this Court should affirm the Federal Circuit's decision.

TRADE, INTELLECTUAL PROPERTY JURISDICTIONS, AND FREEDOM TO OPERATE IN AGRICULTURAL RESEARCH ON STAPLE CROPS at 11 (International Food Policy Research Institute December 2000) ("*bag label contracts* between the manufacturer and the buyer of, for example, seed, . . . limit further uses of purchased material than would otherwise be allowable"); Daniel M. Putterman, *Model Material Transfer Agreements for Equitable Biodiversity Prospecting*, 7 COLO. J. INT'L ENVTL. L. & POL'Y 149, 150-51 (1996) (discussing use of MTAs).

III. UTILITY PATENTS FOR INVENTIONS RELATING TO OR EMBODIED IN PLANTS DO NOT ADVERSELY AFFECT GENETIC DIVERSITY IN THE UNITED STATES

AGCS/NFU also contend that utility patents in living things should be viewed with suspicion because they erode the genetic diversity of agricultural crops. AGCS Br. at 14-16.[15] But while the worldwide preservation of genetic diversity in the plant kingdom is undoubtedly an important international policy objective,[16] the suggestion

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[15] In a related argument, AGCA/NFU invoke the "tragedy of anticommons" – the theory that patents may actually deter innovation by raising barriers to research. AGCA Br. at 16. Like nearly all economic theories, the "patents deter innovation" theory is disputed. *See, e.g.*, F. Scott Kieff, *Facilitating Scientific Research: Intellectual Property Rights and the Norms of Science – A Response to Rai and Eisenberg*, 95 NW. U. L. REV. 691 (2001). Moreover, even some believers in the "anticommons" have concluded that "it is less of a risk than that insufficient patent protection will be granted where it is most needed." *See* Kenneth W. Dam, *Intellectual Property and the Academic Enterprise* (John M. Olin Law & Economics Working Paper No. 68 Dec. 1998), available at <http://www.law.uchicago.edu/Publications/Working/Index.html>. In any event, abandoning the Constitutional assumption, embodied in U.S. Const. Art. I, § 8, that granting inventors exclusive rights for limited times *encourages* innovation, would be an extraordinary change in public policy that must be left to the democratic and political processes of American government.

[16] Genetic diversity is a specific aim of the Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992), and the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, May 15, 2000, 39 I.L.M. 1027 (2000) (which the United States has not signed) and the Food and Agriculture Organization's International Undertaking on Plant Genetic

that utility patents issued by the USPTO cause such erosion is unsupported.[17]

A recent OECD study notes that, "market and agronomic forces," rather than intellectual property rights, may be "the major factors leading to genetic erosion and the loss of genetic diversity," Carliene Brenner, *OECD Development Centre Technical Paper No. 133 – Intellectual Property Rights and Technology Transfer in Developing Country Agriculture: Rhetoric and Reality* at 47 (Mar. 1998), available at <http://www.oecd.org/dev/PUBLICATION/tp/Tp133.pdf>, and that "increased competition" resulting from the availability of intellectual property rights may "lead to more marked product differentiation among firms which, in turn, may enhance genetic diversity." *Id.* Some supporters of the theory agree that it is

Resources (a nonbinding agreement to which the United States is a signatory).

[17] The charge that intellectual property rights may contribute to the narrowing of the genetic base of agricultural crops is most often made with reference to conditions in developing countries, rather than in developed nations such as the United States. This is because, in most developed nations, due to land clearing, decades of commercial-scale farming, and the concentration of farmers' efforts on "cash crops," "genetic erosion" occurred long ago. *See, e.g.*, Jim Chen, *Diversity and Deadlock: Transcending Conventional Wisdom on the Relationship Between Biological Diversity and Intellectual Property*, 31 ENV'TL L. REP. 10625 (June 2001) (considering "in turn the arguments advanced by the genome-rich but underdeveloped South and by the genome-poor, technologically wealthy North").

largely inapplicable to already-industrialized countries such as the United States.[18]

As a global issue, the diminution of available genetic resources is cause for concern. It is not, however, a problem that can or should be remedied by invalidating plant utility patents.

CONCLUSION

The continued availability of utility patents for innovations in plant technology that are original, novel, useful, and nonobvious is critical to the future success of agriculture and the general economy of the United States. For all the reasons discussed above, Delta and Pine Land Company urges this Court to affirm the decision of the Federal Circuit and to hold that sexually reproduced plants are eligible for utility patents under the current

[18] "This problem in the North[ern countries] is a source of aggravation and inefficiency, but is in no way a serious threat to the well being of consumers because most of their major staples are receiving considerable attention from the private sector." *See* Eran Binenbaum, Carol Nottenburg, Philip G. Pardey, Brian D. Wright, and Patricia Zambrano, SOUTH-NORTH TRADE, INTELLECTUAL PROPERTY JURISDICTIONS, AND FREEDOM TO OPERATE IN AGRICULTURAL RESEARCH ON STAPLE CROPS at 4 (International Food Policy Research Institute Dec. 2000), available at <http://www.ifpri.cgiar.org/checknames.cfm/eptdp70.pdf?name=eptdp70.pdf&direc=d:webs\ifpri\divs\eptd\dp\papers>.

statutory scheme, so long as they meet the statutory requirements for patentability.

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In The

Supreme Court of the United States

J.E.M. AG SUPPLY, INC. (doing business as Farm Advantage, Inc.), FARM ADVANTAGE, INC., LARRY BENZ, MERLE PRUETT (doing business as Siouxland Seeds, Inc.), KEVIN WOLFSWUNKEL, TIM KAMSTRA, and TOM EISCHEN SEED & CHEMICALS,

Petitioners,

v.

PIONEER HI-BRED INTERNATIONAL, INC.

Respondent.

On Writ of Certiorari to the
United States Court of Appeals
For the Federal Circuit

BRIEF *AMICUS CURIAE* OF CARGILL, INCORPORATED IN SUPPORT OF THE RESPONDENT

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QUESTION PRESENTED

Are utility patents issued under 35 U.S.C. § 101 granting the right to exclude others from sexually reproducing plants or plant varieties, or from selling or using plants or plant varieties reproduced by means of sexual reproduction (by seed), invalid because the Plant Variety Protection Act of 1970, 7 U.S.C. § 2321, *et seq.*, and the Plant Patent Act of 1930, 35 U.S.C. §§ 161-164, are the exclusive means of obtaining a federal statutory right to exclude others from reproducing, selling, or using plants and plant varieties?

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INTEREST OF THE *AMICUS CURIAE*

The *Amicus Curiae* ("Cargill") is a leading international marketer, processor, and distributor of agricultural, food, financial, and industrial products and services.[1] Cargill's central interest in this case relates to its role as a processor of agricultural goods into more highly valued food and industrial products, such as corn syrup, citric acid, vegetable oils, sodium citrate, corn starch, and wheat flour. Cargill also invests heavily in the development of functionally and agronomically improved canola varieties through its InterMountain Canola division, which holds a number of patents on canola end-products and their processing.[2] Additionally, Cargill is a co-owner of a joint venture (Renessen LLC) directed to the development and commercialization of seed products for the animal feed and processing markets.

Cargill's core businesses have been intimately entwined with the Nation's food supply for over a

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[1] The parties have consented to the filing of this brief, and letters of consent are being filed herewith. In accordance with Supreme Court Rule 37.6, the *Amicus Curiae* represents that no counsel for a party authored this brief in whole or in part and no person or entity, other than the *Amicus Curiae* or its counsel made a monetary contribution to the preparation or submission of this brief.

[2] *See, e.g.*, U.S. Pat. 6,201,145 ("Non-hydrogenated canola oil for food applications"); U.S. Pat. 6,159,715 ("Method for processing oilseed material"); U.S. Pat. 5,668,299 ("Seeds, plants and oils with altered fatty acid profiles") (available at http://www.uspto.gov/patft/index.html). Cargill recently sold its seed business, which held a number of patents on corn and sunflowers, and Cargill no longer maintains an interest in that business or those patents.

Congress chose to meet the constitutional mandate that patents "promote the Progress of Science and Useful Arts," not by enumerating a specific, inflexible list of patentable subject matter, but instead by providing protection to anything made by man, and requiring that each invention be new (sections 101 and 102), useful (section 101), and nonobvious (section 103). *See Graham v. John Deere Co.*, 383 U.S. 1, 12-13 (1966); *see also Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 483 (1974). In addition, to ensure that the public need not suffer the embarrassment of a monopoly without a *quid pro quo*, Congress required, in section 112, that a patentee provide a full and enabling disclosure of the invention –a requirement that ensures that the patentee may not retain the invention as a trade secret. *See Universal Oil Prods. Co. v. Globe Oil & Refining Co.*, 322 U.S. 471, 484 (1944); *see also Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989).[4]

Section 101's plain language—particularly the terms "manufacture" and "composition of matter"—"fairly embraces" sexually reproducing plants just as it did bacteria. *See Chakrabarty*, 477 U.S. at 318. Petitioners can find no text on which to hang their argument that section 101 excludes sexually reproducing plants, though they are a "new and useful composition of matter" made by man. Just as new technologies in the past have emerged and then developed to the point at which they can meet the requirements for patentability, the Patent Act admits of no special reason that sexually reproducing plants cannot do the same. Where the language of the statute is clear, it is given its plain meaning, and further inquiry is unnecessary. *E.g., Ingalls Shipbuilding, Inc. v. Director, OWCP*, 519 U.S. 248, 261 (1997).

[4] Petitioners have argued below that Pioneer's patents are also invalid for failing to meet the "enablement" requirement of section 112, and will undoubtedly pursue that argument if this Court grants an affirmance. 35 U.S.C. § 112.

II. The Patent Act and Plant-Specific Acts Do Not Together Exclude Sexually Reproducing Plants From Section 101.

There is no legitimate way to find an implicit exclusion of sexually reproducing plants from section 101 based on the whole of Congress' intellectual property legislation, particularly given the broad language of section 101. Such a limitation may be found only if one ignores the important distinction between what may fairly be gleaned from the legislative history—Congress' *recognition* that sexually reproducing plants could not at the time be patented for practical reasons—and what may not: Congress' positive *intention* that sexually reproducing plants should not be patented. Indeed, throughout its legislating in this arena, Congress has consistently expressed its intent that sexually reproducing plants be provided protection equal to other inventions—to the extent practicably possible—and has sought to provide such protection.

A. The Plant-Specific Acts Do Not Limit Utility Patent Protection For Sexually Reproducing Plants

None of the relevant statutes shows a positive intent by Congress to prevent utility patenting of

century. As a result, Cargill has a deep-rooted interest in ensuring that American farmers can produce the most advanced agri-products possible, and that their ability to produce crops is not threatened by any unforeseen crisis. Cargill benefits when farmers have access to seeds that provide disease and insect resistance, drought and cold tolerance, high yields, and enhanced functional grain properties such as high oil content. Thus, Cargill's interest is the same as that expressed by Congress in passing the Plant Patent Act in 1930:

> No one will question the fact that new varieties of food, medicinal, and other economic plants may be an important factor in maintaining public health and in promoting public safety and national defense. Thus the food supply of the Nation, both from the viewpoint of the producer and the user, is of vital importance, and insurance against failure in that supply is necessary to public safety and national prosperity. Plant breeding and discovery, while in its infancy, is fundamentally connected with the Nation's food supply, and will, if encouraged and developed, be of incalculable value in maintaining public health and prosperity, and in promoting public safety and the national defense.

S. Rep. No. 71-315, at 2-3 (1930).

It takes many years of complex and expensive research to develop a new plant variety. As a result, it is important even today, in a time of relative plenty, to ensure that all reasonable efforts are made to improve the plant varieties available to our farmers. It

is with this interest in mind that Congress has allowed the patenting of sexually reproducing plants, as properly recognized by the United States Court of Appeals for the Federal Circuit. The appellate court's ruling is in accord with the language of the Patent Act, and is entirely consistent with the other extrinsic evidence of Congress' intent, including other statutes and all relevant legislative history.

SUMMARY OF THE ARGUMENT

Congress drafted the statutory language relevant to this appeal, section 101 of Title 35, to be open-ended so that technologies not previously believed patentable could develop over time until they satisfied the various statutory requirements for patentability. Respondents have not challenged the premise that the clear and plain language of section 101 covers sexually reproducing plants.

The supposed penumbra created by the two plant-specific acts (the PPA and the PVPA) does not prevent the utility patenting of sexually reproducing plants under section 101. Those acts show at most a *belief* by Congress that, for practical reasons, plants could not successfully be patented at the time. But they do not show an affirmative congressional *intention* that plants should not be patented. At each turn, Congress' words and actions indicate an intention to provide coverage for plants equivalent to that available for other inventions—to the extent practicably possible at the time. Advancements that have occurred since the congressional utterances on which Petitioners rely now provide the practical, technical basis on which utility patents may be granted for sexually reproducing plants.

Any ruling that limits the utility patenting of plants should be carefully circumscribed. In addition, any narrowing of section 101 should apply only prospectively, given the risks that researchers have taken over the past two decades in a reasonable belief that sexually reproducing plants could be patented.

ARGUMENT

I. The Patent Act's Plain Language Encompasses Sexually Reproducing Plants

The starting point for the construction of any statute is the language of the statute itself, which is to be given its "ordinary, contemporary, common meaning." *Diamond v. Diehr*, 450 U.S. 175, 182 (1981) (*quoting Perrin v. United States*, 444 U.S. 37, 42 (1979)); *Hallstrom v. Tillamook County*, 493 U.S. 20, 25 (1989). The language of the statutory provision at issue here, section 101 of Title 35, is plain and simple:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions of this title.

35 U.S.C. § 101. If a new and useful invention falls within one of the four listed classes of subject matter and meets the other requirements for patentability in sections 102, 103, and 112, it is patentable.

In *Diamond v. Chakrabarty*, this Court recognized section 101's great breadth when it considered the patentability of a man-made bacterium. It was irrelevant that Congress could not have considered

man-made bacteria to be patentable when passing the Patent Act in 1952 because "genetic technology was unforeseen" at that time (447 U.S. 303, 314 (1980)):

> A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability. *See Graham v. John Deere Co.*, 383 U.S. at 12-17. Mr. Justice Douglas reminded that the inventions most benefiting mankind are those that "push back the frontiers of chemistry, physics, and the like." *Great A. & P Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 154 (1950) (concurring opinion). Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable.

447 U.S. at 316. The Court specifically cautioned that it is improper to "read into the patent laws limitations and conditions which the legislature has not expressed." *Id.* at 308 (*quoting United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)).[3]

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[3] Only very limited groups of subject matter have been excluded from coverage under section 101, either because they were not "made by man" (*e.g.*, laws of nature, natural phenomena, and abstract ideas), *see Diehr*, 450 U.S. at 185, or because they were a mere disembodied concept that is a basic tool of scientific and technological work, and thus treated as if it were a "familiar part of the prior art" and not "new" (*e.g.*, algorithms with no application), *e.g.*, *Parker v. Flook*, 437 U.S. 584, 591-92 (1978). These exceptions are not applicable to the patented plants in this case, which, we must assume, *see id.* at 588, were newly developed at the hands of skilled researchers.

sexually reproducing plants. What the statutes instead show is a repeated congressional refusal to relax the technical requirements for a utility patent in section 112. Each time Congress was faced with subject matter that it believed warranted protection yet was incapable of meeting section 112, it provided specific protection elsewhere, but it never carved out a special exception for plants from section 101. As a result, Congress by its actions left open the possibility that sexually reproducing plants could be covered by utility patents if, and when, they could be adequately described and claimed (per section 112) in a patent application.

For its part, the Plant Patent Act provides a positive right to seek a patent on an asexually reproducing variety, but it says nothing positive or negative about the ability to obtain a patent claim relating to sexually reproducing plants. Rather, it simply provides (outside the main Patent Act) that the requirements of section 112 shall not apply to plant patents. *See* 35 U.S.C. § 162. That Congress chose to allow the patenting of asexually reproducing plants without satisfying the disclosure requirements of section 112 in no way implies that it intended to exclude plant patents under section 101 when disclosure *could* be achieved in conformity with section 112. It would have been easy enough for Congress to say in the PPA that the PPA provided the exclusive way to patent plants; it did not do so.

Likewise, the PVPA provides a positive right to obtain narrow protection for a novel "variety," but it too says nothing for or against the patenting of sexually reproducing plants. Its narrow coverage of only varieties further belies any claim that the Act was

meant to be fully comprehensive. *See* 7 U.S.C. § 2401(a)(9) (defining "variety"). Both acts left intact the broad language in section 101, which does not carve out special exceptions for any technology. Thus, by their language and effect, the PPA and PVPA embrace the utility patenting of sexually reproducing plants.

Congress' actions since it passed each statute indicate that it is comfortable with the current statutory scheme as interpreted by the expert agency with responsibility for patents, the Patent Office. Since the 1985 judicial announcement in *Ex Parte Hibberd*, 227 U.S.P.Q. 443 (PTO Bd. Pat. App. & Int. 1985) that sexually reproducing plants could receive utility patents, Congress has returned to the Patent Act and the PVPA for both major and minor revisions.[5] Yet it has not acted to plug the supposed section 101 loophole through which the Patent Office has been driving utility patents. *See Zemel v. Rusts*, 381 U.S. 1, 11-12 (1965) (Congress ratified an agency interpretation when upon amending the statute, it left "completely untouched" the provision in issue); *Bob Jones Univ. v. United States*, 461 U.S. 574, 599-601 (1983). And neither the Patent Office nor the De-

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[5] *See, e.g.*, Intellectual Property and Communications Omnibus Reform Act, Pub. L. No. 106-113, §§ 4001-4808, 113 Stat. 1501A, 1501A-552 to 1501A-591 (1999); Biotechnology Process Patent Law Revision, Pub. L. No. 104-41, 109 Stat. 351 (1995); Plant Variety Protection Act Amendments of 1994, Pub. L. No. 103-349, 108 Stat. 3136 (1994); Patent and Plant Variety Protection Remedy Clarification Act, Pub. L. No. 102-560, 106 Stat. 4230 (1992); Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-418, §§ 9001-9202, 102 Stat. 1107, 1563-1570 (1988); Patent Law Amendments Act of 1984, Pub. L. No. 98-622, 98 Stat. 3384 (1984).

partment of Agriculture has come to Congress complaining of conflicts between the acts. That is because the acts are entirely consistent with each other.

Congress has also recently shown, outside the area of plants, an ability to act in response to decisions by the Patent Office and the Federal Circuit, and has shown its intent that section 101 should be free of artificial limitations. In 1998, the Federal Circuit held, in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999), that there was no silent limitation in section 101 on patenting "methods of doing business." Congress reacted, not by telling the court that there is such a limitation, but by implicitly approving of the court's ruling through the creation of a new defense that applies only against patents on "method[s] of doing and conducting business." First Inventor Defense Act of 1999, Pub. L. No. 106-113, at § 4302, 113 Stat. 1501A, 1501A-555 (1999). In a nutshell, Congress has seen that each Act provides its own type of protection based on different requirements, and has found no problem with that statutory scheme.

B. The Plant-Specific Acts Do Not Conflict With the Patent Act; They Complement It

This Court's precedent does not allow one act of Congress implicitly to erase another simply because they overlap; rather, there must be a "positive repugnancy" between the acts, or the acts must be incapable of mutual coexistence. *Radzanower v. Touche Ross & Co.*, 426 U.S. 148, 155 (1976). Where there is any way the acts can co-exist, courts have a duty to

regard each as effective. *See Morton v. Mancari*, 417 U.S. 535, 551 (1974).

The statutory scheme established by the three acts makes complete sense. All three provide innovators with a positive right to exclude others from practicing the relevant innovation, and thus are consistent with each other. The plant-specific acts complement the Patent Act by providing limited protection where the "rigorous statutory tests" of the Patent Act cannot be met. *Kewanee Oil*, 416 U.S. at 477. For example, a PVPA certificate may be obtained merely by showing that a variety is novel, but a utility patent requires a much higher showing of nonobviousness. *Compare* 7 U.S.C. § 2402 *with* 35 U.S.C. § 103. In addition, a prospective patentee must clear the several hurdles of 35 U.S.C. § 112, such as providing a written description of the invention that would enable someone to make and use it, and drafting claims that particularly point out and distinctly claim the invention. In contrast, aspirants for a PVPA certificate or a plant patent need not make such a detailed and enabling disclosure. *See* 7 U.S.C. § 2422; 35 U.S.C. § 162; 7 C.F.R. § 97.6.

This statutory scheme works without conflict in practice. A developer of a new sexually reproducing plant may pursue protection under the PVPA if she is not confident that she can clear the hurdles for a utility patent. If she is confident that she can show that her discovery would not have been obvious, *and* can describe and claim it adequately, she may pursue a utility patent. She may also pursue both. Her pursuit of a PVPA certificate does not conflict with her pursuit of a patent, and the Patent Office's grant of one right does not derogate from the Department

of Agriculture's grant of another. This is how the Patent Act and the PVPA have co-existed perfectly for many years. Petitioners cannot square their argument that the acts are inimically opposed with this peaceful co-existence.

Petitioners see a conflict in the fact that holders of utility patents, who have had to clear the higher hurdles of sections 103 and 112, are not subjected to the crop exemption and the research exemption of the PVPA. But Petitioners ignore the careful wording Congress chose for both exemptions. In particular, the crop exemption states that the saving of seed "shall not infringe any right hereunder [*i.e.*, the PVPA]," 7 U.S.C. § 2543, while the research exemption states that research activities "shall not constitute an infringement of the protection provided under this chapter [*i.e.*, the PVPA]," *id.* § 2544. Thus, Congress did not provide an absolute right to save seed or to conduct research; it merely stated that such activities would not infringe a PVPA certificate. Congress' careful wording thus anticipates that such activities could infringe other rights, such as utility patent rights.

In contending that section 101 must be read narrowly in light of the PVPA, Petitioners rely heavily on *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120 (2000). But that case merely stands for the proposition that a statute should not be read in a way that makes it *repugnant* to other statutes. In *Brown & Williamson*, the FDA, if it were to regulate tobacco at all, would have had to ban tobacco completely. Congress demonstrated its intent that tobacco not be banned, however, by passing a number of tobacco regulating statutes after it had passed the

Food, Drug, and Cosmetic Act. The Court reasoned that, despite a broad grant of jurisdiction, the FDA could not have jurisdiction over tobacco because its tobacco-banning-only authority was repugnant to subsequent tobacco regulating statutes. *See* 529 U.S. at 137-39. *Brown & Williamson* does not stand, as Petitioners would have it, for the broad proposition that a specific statute will prevent a general statute from operating even where they are *consistent* with each other. There is nothing repugnant about the PVPA providing a specific type of protection for plants, and the Patent Act providing a different type of protection; the Acts are fully consistent.

The intellectual property decisions on which petitioners rely also deal only with proposed statutory interpretations that would make co-existence of two statutes impossible. Those cases simply state the natural rule that a statute designed to protect functional items (*e.g.*, the Patent Act) cannot protect the same things as statutes designed to protect nonfunctional items (*e.g.*, the Copyright Act and the Trademark Act).

For example, in *Traffix Devices, Inc. v. Marketing Displays, Inc.*, 121 S.Ct. 1255 (2001), the Court held that a feature is very likely functional (and therefore incapable of contributing to trade dress) if it is recited in a utility patent claim. An attempt to cover the same item with functional protection (utility patent) and non-functional protection (design patent) was also the subject of *Ropat Corp. v. McGraw-Edison Co.*, 535 F.2d 378 (7th Cir. 1976), also cited by Petitioners.

Where both regimes provide non-functional protection, or both provide functional protection, dual

coverage of the same item is allowed. For example, an image of Mickey Mouse may be copyrighted as a pictorial work, *see* 17 U.S.C. § 102, and may also serve as a trademark that indicates that The Walt Disney Company is the source of a product or service, *see* 15 U.S.C. §§ 1125, 1127. In considering whether copyright *and* design patent (covering "ornamental" features) protection may be sought for the same design, the Court of Customs and Patent Appeals (predecessor to the Federal Circuit) stated the rationale for overlapping protection:

> The Congress, through its legislation under the authority of the Constitution, has interpreted the Constitution as authorizing an area of overlap where a certain type of creation may be the subject matter of a copyright and the subject matter of a design patent. * * * Congress has not required an author-inventor to elect between the two modes which it has provided for securing exclusive rights on the type of subject matter here involved. If anything, the concurrent availability of both modes of securing exclusive rights aids in achieving the stated purpose of the constitutional provision.

In re Yardley, 493 F.2d 1389, 1395-96 (C.C.P.A. 1974).

This Court's decision in *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974), shows that two intellectual property schemes can protect the same *functional* item. In *Kewanee*, the Court ruled that items eligible for patent protection may also be protected by state trade secret law, and that existence of a different type of protection for the same item was

consistent with the patent policy of encouraging invention. *See id.* at 484. The main tension between trade secrets and patents—secrecy vs. disclosure—did not constitute a barrier to trade secret protection, and is not a factor here, since the Patent Act, the PPA, and the PVPA all encourage disclosure. Petitioners' invitation to strike dual coverage on a single item is unsupported by case law or logic. Rather, the Patent Act and the PVPA are paradigmatic of intellectual property regimes that can be layered without inconsistency.

C. Sexually Reproducing Plants Fit Within the Patent Regime Just Like Any Other Modern Technology

By imposing the requirements that patentable inventions be new, useful, and nonobvious, and by requiring full, enabling disclosures of inventions, Congress has expressed the constitutional requirement that patent protection be in furtherance of the useful arts. *See Graham*, 383 U.S. at 1. This Court has spoken repeatedly of the public benefits of a system that rewards full disclosure with a limited term of exclusivity:

> [The inventor] may keep his invention secret and reap its fruits indefinitely. In consideration of its disclosure and the consequent benefit to the community, the patent is granted. An exclusive enjoyment is guaranteed him for seventeen years, but upon expiration of that period, the knowledge of the invention inures to the people, who are thus enabled without restriction to practice it and profit by its use.

Dubilier Condenser Corp., 289 U.S. at 186-87; *see Bonito Boats*, 489 U.S. at 150-51; *see also Universal Oil Prods.*, 322 U.S. at 484; *The Incandescent Lamp Patent*, 159 U.S. 465, 475 (1895).

The patents in this case fit that congressional scheme in the same manner as do other technologies. Unlike when the PPA and PVPA were enacted, plants may now be described and claimed in a manner that satisfies section 112, so that the public may obtain the full benefit of the invention. The main obstacle to patenting plants—providing a disclosure of the invention that will "enable" others to make and use the invention—was solved through the use of "deposits." In the biological sciences, where an invention may not always be produced from a simple description on paper, it is now common to provide the invention or starting materials for the invention (*e.g.*, cells cultures or a packet of seeds) to a public depository that will make the deposited materials available to all comers. *See In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). The Patent Office even has regulations governing such deposits. *See* 37 C.F.R. §§ 1.801-1.809. Deposits were first judicially approved in 1970, in the context of microorganisms. *See In re Argoudelis*, 434 F.2d 1390 (C.C.P.A. 1970).

The ability to meet the section 112 requirement that utility patent claims be "definite" enough to apprise the public of their scope has also improved dramatically for plants. *See General Electric Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938). Fewer than 50 years ago, Watson and Crick first conceived of their visual model of DNA. Thus, when two of the three acts relevant to this case were passed, Congress could not have even comprehended that the

that the features of a plant could be described by a discrete, objective code within the plant itself. Modern analytical techniques—especially DNA analysis techniques developed since the PVPA was passed—allow scientists to discern qualities of a deposited seed that cannot be seen by viewing a plant grown from the seed. As a result, patentees can better describe and claim their inventions, and others can better determine whether they infringe a patent. Enormous strides have been made in the past two decades, and our patent laws are fully capable of accommodating these advances, as they have for two centuries,

As with other modern, complex technologies, development of new and better plants takes many years and an enormous investment. Each species has its own unique characteristics and challenges. Relevant to this case, a typical corn breeder first selects two distinct plants to "cross-pollinate" so as to make a new plant. She then begins an iterative process of crossing the offspring with each other ("sib pollinating") or with themselves ("self pollinating"), and selecting only offspring that appear to have favorable traits (such as drought tolerance or high yield). The genetics of the original offspring are mixed up, so that even self-pollination creates a range of offspring rather than clones. However, with further rounds of self-pollination and selection (usually a half-dozen seasons or more), each group of selected plants ultimately reaches a stability whereby each successive self-pollinated generation is essentially the same as the last. At that point, the breeder has developed a new variety. Because there is no formula for selecting the proper plants to cross and to self-pollinate, the breeding process often involves as much "art" as

it does science. *See* Arnel Roy Hallauer, *Maize, in* 2 *Principles of Cultivar Development* 263 (Walter R. Fehr, ed., 1987).

Development of hybrid corn seeds—the only corn seeds that matter to a farmer—is even more difficult. A hybrid seed is produced by crossing two (or more) inbred varieties that are very unlike each other. While the inbred plants are generally small and scraggly, the plant that grows from the hybrid seed can be large and strong—and nobody fully understands how this occurs. Indeed, some of the ugliest inbreds produce some of the finest hybrids. Thus, a developer of hybrids not only must determine what plants to cross and select to produce an inbred line, she must also determine what inbreds best cross to create a good hybrid, and she must develop inbred lines that often hide their strengths from the human eye. *See generally* Walter R. Fehr, *General Principles, in* 2 *Principles of Cultivar Development* 9-10 (Walter R. Fehr, ed., 1987).

Modern breeders employ costly advanced technologies (such as molecular analysis and gas chromatography) to assist in their creation of superior hybrids. For corn, the hybrid seed is what the farmer purchases, and therefore is the product that generates the revenue that justifies massive investment in further research. Because farmers demand ever more from new plants, each breeding improvement requires even greater investment and produces greater investment risk for the breeder.

At the same time, plants are highly susceptible of copying. Once a new plant line has been stabilized, further self-pollination can create thousands of replicas of the plant. Thus, the plant breeder, after incurring the high cost of years of development, is faced with the possibility that others will simply free ride on her research. Without some promise that she will be able to protect her developments, there is no prospect that someone will provide financial backing for her risky research. As a result, plant breeding is paradigmatic of a field that needs to be spurred on (and has been spurred on, as evidenced by the investments made in plant breeding over the past decade) by patent protection. *See generally* Adam Smith, *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Book V, ch. 1, at 712 (Cannan ed. 1776).

Not only does the risk of a "free rider" create a problem for the plant breeder, it also creates a problem for agriculture at large. Where "germplasm" (the term for plant genetic material, like seeds) can be copied freely, all will rush to use what, at the time, appears to be the "best" germplasm. *See generally* Paul E. Schaafsma, *An Economic Overview of Patents*, J. Pat. & Trademark Off. Soc'y 241 (1997). Without some expectation of a return, no one will take the research risks that produce breakthrough science, and after a time, farmers will be left with a gene pool that consists of a number of minor improvements of the now-old "best" germplasm. Such a narrowing of the genetic base leaves all of the newly developed lines, which share most of the same genetics, open to any unforeseen problem with the "best" germplasm. And when that problem comes, the industry cannot quickly revert to the abandoned seeds of years past.

Preventing patents on sexually reproducing plants presents other practical problems. For exam-

ple, plant researchers are expanding beyond development of plants having good agronomic traits, such as high yield and disease resistance, to plants having nutritional benefits. This requires research over and above the traditional breeding described above, and continued investment in the area will depend greatly on the promise of a stable intellectual property system. Furthermore, the newest and smallest companies are the ones that need patents the most, so that they can provide a proprietary advantage to counter the economies of scale held by larger competitors.

The PVPA does not alone provide adequate protection for newly developed plants whose development meets the "nonobvious" standard for patentability. High-tech seeds are affordable to farmers because companies can expect to spread their revenues out over many years; if seed companies were forced to recover their investment through a single sale to each farmer, they would have to price the seed at a level no one could afford. Denying patent protection for seeds that have already been developed would be a great short-term boon for farmers, but it would deny farmers of any improved seeds for years to come, as companies abandon an industry in which profit has become a mere dream.

And the PVPA does not provide the public with all that Petitioners suppose, because it has no requirement that seeds be made available to the public. As a result, companies that sell hybrid corn can keep the inbred parents of a hybrid as trade secrets, thus denying the public of any benefit. If the inbred parents are patented, in contrast, they must be disclosed through a public deposit.

III. The Legislative History Shows Congress' Intent to Provide Full Patent Protection for Sexually Reproducing Plants

The legislative history of the three acts confirms that Congress' failure to add specific mention of sexually reproducing plants to section 101 reflects not an intent to prevent patenting of plants, but an unwillingness to carve out specific exemptions in the Patent Act to the technical requirements of section 112. Instead of modifying section 112, Congress provided that asexually reproducing plants, in a separate section of the Act, may be patented without complying with the disclosure requirements of section 112. It provided for the protection of sexually reproducing plants in another act. But it never foreclosed the opportunity to obtain a patent once technology advanced to a point that the technical hurdles to satisfying section 112 could be cleared, and it repeatedly showed its intent that plants be as protected as other inventions to the extent practicably possible.

Congress first expressed this intent when considering the Plant Patent Act. The Senate Committee Report stated:

> The purpose of the bill is to afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given industry, and thus assist in placing agriculture on a basis of economic equality with industry.

S. Rep. No. 71-315, at 1 (1930). Congress also recognized that, at the time, sexually-reproduced plants could not be patented because of technical, not legal,

issues: "[The patent right] does not include the right to propagate by seeds. This limitation in the right granted *recognizes a practical situation.*" *Id.* at 4 (emphasis added). The House Report likewise showed Congress' intent to provide protection for plants to the extent technically possible without relaxing the section 112 standards: "This bill is intended not only to correct such discrimination, but in doing so it is hoped the genius of young agriculturalists of America will be enlisted in a profitable work of invention and discovery of new plants that will revolutionize agriculture as inventions in steam, electricity, and chemistry have revolutionized those fields and advanced our civilization." H.R. Rep. No. 71-1129, at 2 (1930).

The ability to describe plants adequately for section 112 still had not developed by the time Congress considered the PVPA, as Congress expressly recognized:

> Under patent law, protection is *presently* limited to those varieties of plants which reproduce asexually, that is, by such methods as grafting or budding.

H.R. Rep. No. 91-1605, at 1 (1970) (emphasis added). Nowhere does the legislative history suggest an intention by Congress that the Patent Act *should not*, in the area of plants, cover new developments. Instead, it shows an intention that new developments should have all available protections.

IV. Any Prohibition Against Patenting Sexually Reproducing Plants Should Be Limited

For the reasons set forth above, *amicus* Cargill believes that the Patent Office and Federal Circuit are clearly correct in their conclusion that section 101 encompasses sexually reproducing plants. Should this Court nevertheless conclude that some certain plant subject matter is excluded from scope of section 101, Cargill urges the Court to proceed with caution in circumscribing the excluded subject matter.

A. The Scope Of Unpatentable Subject Matter Should Equal What Is Protected By the PVPA

As a starting point, the Court should hold that subject matter not covered by the PPA or PVPA, but which otherwise satisfies the requirements of the patent statute, should be permitted utility patent protection under section 101. Utility patent protection for such plant material would be entirely consistent with a PVPA or PPA-based exclusion of subject matter from section 101. To hold otherwise would create a gaping hole in the federal intellectual property protection for plants, excluding important innovations from federal protection and paving the way for copyists to appropriate the valuable inventions of others with impunity.

Cargill submits further that even if certain plant subject matter is held excluded from section 101, utility patent protection should remain permissible for transgenic and mutagenized plants. By definition, a transgenic plant contains genetic material intro-

duced through technical means and which confers a desirable trait, *e.g.*, insect resistance, that can be propagated to successive generations of the plant. Mutagenesis involves an intervention to alter the genetics of a plant, followed by selection of desirable altered genetics, *e.g.*, a desirable fat profile, that can then be propagated in the offspring of the selected plant. This subject matter is closely analogous with the man-made, genetically-engineered microorganism of *Chakrabarty*.

The drafters of the PPA and PVPA could not possibly have anticipated the development of transgenics in plants. These later-developed technologies have revolutionized agricultural biotechnology, and the variety-based protections afforded by the PPA and PVPA are wholly inadequate to protect this valuable technology, which has been developed through the commitment of vast amounts of industry time and resources. Whereas a PVPA certificate can only cover a single variety of a plant, even if genetically altered through transgenics or mutagenesis, a utility patent claim can cover all members of an entire species that harbor the man-made, desirable genetics. The scope of protection for such inventions provided by utility patents is appropriate to the level of innovation and the nature of the inventions embodied in transgenic and mutagenized plants. To deny such innovations the benefits of utility patent protection would certainly conflict with the Court's rejection in *Chakrabarty* of the notion that "unanticipated invention are without protection [in patent law]." 447 U.S. at 317. Such a denial of protection would also put at risk other investment and commitment to innovation that is essential for further development in this industry, at a time when these

very innovations loom so large in the future size and quality of the world's food supply.

Any decision of the Court resulting in the exclusion of plant subject matter from section 101 should thus, at a minimum: (1) explicitly preserve utility patent protection for plant material not covered by the PPA or PVPA; and (2) include transgenic and mutagenized plants within the scope of section 101.

B. Any Limitation on Patentability Should Apply Prospectively Only

Since the decision in *Hibberd* in 1985, plant breeders have obtained thousands of utility patents at enormous expense, and have structured their commercial dealings in reasonable reliance on a system that has allowed patenting of sexually reproducing plants. Therefore, this Court should apply any limit on utility patenting of plants prospectively only.

Three factors are relevant to the present analysis:

1. whether the holding decides an issue of first impression whose resolution was not clearly foreshadowed by earlier cases;
2. whether retrospective application would further or retard the holding; and
3. whether retrospective application could produce substantial inequitable results in individual cases.

See Chevron Oil Co. v. Huson, 404 U.S. 97, 106-07 (1971); *see also Northern Pipeline Co. v. Marathon Pipe Line Co.*, 458 U.S. 50, 87 (1982); *Allen v. State Bd. of Elections*, 393 U.S. 544, 571-72 (1969).

Under each of these three factors, retroactive application of a rule that would invalidate issued or pending patents would be wholly improper. First, this is truly a matter of first impression for this Court. Never before has the Court considered the interplay between the Patent Act and the PVPA. In addition, the closest case, *Chakrabarty*, made clear that the scope of subject matter that may be patented is expansive and includes living organisms.

Nor would the Court's holding be retarded by prospective application. In reliance on the existing state of the law, the holders of patents on sexually reproducing plants chose to forego the option of trade secret protection, and entered into the "patent bargain" by fully disclosing their inventions. Allowing them to receive the benefit of the bargain would in no way undercut the policies inherent in the Patent Act. Indeed, because of the enormous up-front research costs needed to develop new technologies, like the plants in this case, and the often distant recovery of those costs, it is essential that companies can continue to hold an expectation that the intellectual property laws in effect today will not change suddenly in the future.

Perhaps most important to this issue is the inequity that would fall upon holders of utility patents. In addition to the thousands of dollars in attorney fees and Patent Office fees required to obtain and maintain a patent, they have suffered the loss of trade secret protection that—because patent disclosure has already been made—can never be recovered. Thus, retroactive application of a narrowing interpretation of section 101 not only would deny patentees their patent rights, but would effectively

take away any ability to protect their innovations. Competitors will simply rush the public seed depositories to get the seed that the patentees were forced to deposit to get a patent in the first place, and will begin copying the seeds.

Furthermore, this is not a situation in which parties have proceeded unilaterally at their own risk, and have spent money pursuing an uncertain course of action. The vast majority of the thousands of extant patents were obtained in reliance on the Patent Office's policy of granting such patents and the 16-year-old decision in *Hibberd* approving of that policy. In addition to abandoning their rights to trade secret protection, many companies have established complex cross-licensing agreements. In such agreements, the company that offered up its utility patents will lose the benefit of its bargain, as its licensing partner seeks to exploit the technology for free and the patentee is left powerless to enforce the license. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 618-19 (Fed. Cir. 2000) (*en banc*) (Michel, J., dissenting) (noting that sudden, unexpected limitations on patent rights can unfairly prejudice licensors).

CONCLUSION

For the foregoing reasons, Cargill respectfully requests that the Court affirm the decision of the United States Court of Appeals for the Federal Circuit.

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